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F6a

Consistency Determination Number:	CD-021-03
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Staff:	D.Carl
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FEDERAL CONSISTENCY DETERMINATION

Federal Agency.....**United States Army Corps of Engineers (Local Project Sponsor: Santa Cruz County Redevelopment Agency)**

Project location .....Bluff and beach area fronting East Cliff Drive between 32nd and 36th Avenues in the Pleasure Point portion of the Live Oak beach area of Santa Cruz County.

Project description.....Construction of full-bluff (extending from the beach/Monterey Bay to East Cliff Drive above) 1,100 linear foot sculpted concrete seawall, construction of one new and one replacement public access stairway, demolition of an abandoned restroom, removal of concrete rubble previously placed on the beach, and relocation of rip-rap boulders.

File documents.....Santa Cruz County certified Local Coastal Program (LCP); California Coastal Commission Monterey Bay ReCAP.

Staff recommendation ...**Conditionally Concur with Consistency Determination**

Summary of Staff Recommendation: The U.S. Army Corps of Engineers (ACOE) proposes to construct an 1,100 linear foot sculpted concrete seawall fronting the bluff seaward of East Cliff Drive in the Pleasure Point portion of the Live Oak beach area of Santa Cruz County (Pleasure Point seawall). The seawall is meant to protect East Cliff Drive (including preservation of the vehicular travel lane as well as the pedestrian/bicyclist recreational trail area) and the public utilities embedded below it. This section of East Cliff Drive is a very popular recreational use area that attracts a significant number of users. The seawall is functionally related to Santa Cruz County's proposal to subsequently reconstruct the East Cliff Drive right-of-way with an improved recreational trail and other related amenities (East Cliff Drive parkway). The Santa Cruz County Redevelopment Agency is the local project sponsor for the ACOE seawall proposal as well as the applicant for the parkway. These future parkway improvements are not an ACOE project and are not a part of the consistency determination before the Commission. Likewise, although ACOE has evaluated constructing another smaller seawall downcoast at the intersection of East Cliff Drive with 41st Avenue (at the "Hook") that is also related to the County's parkway project, the Hook seawall is not before the Commission at this time.

Portions of East Cliff Drive already have been impacted by coastal erosion, resulting in the loss of one travel lane to date. Utilities beneath the road are, in places, within 11 feet of the blufftop edge. The long-

term average bluff retreat rate has been estimated to be approximately 1 foot per year, and discrete episodic erosion events are estimated to result in up to 10 feet of bluff loss at a time. The Commission's geologist has evaluated the project and the project's underlying threat evaluation, and determined that the remaining portion of East Cliff Drive and its underlying utilities are "in danger" as that term is understood in a Coastal Act context.

The types of negative resource impacts, such as the loss of beach and viewshed degradation, due to armoring are well known to the Commission. In this case these types of impacts are magnified due to the fact that the seawall is located in an extremely important recreational use area, with a world-renowned surfing area located directly offshore (i.e., "Pleasure Point"). In part due to the sensitivity of the site, and the negative impacts expected from the project, Staff requested that ACOE thoroughly evaluate non-armoring alternatives including: (a) evaluation of a planned retreat strategy for this section of coast; (b) regional beach nourishment programs; (c) corrective measures to improve the transport of sand around the Santa Cruz Harbor jetties, and potential modifications to the jetties themselves; (d) enhanced management of blufftop terrace deposits through vegetation and drainage controls and relocation of threatened structures to the inland extent of right-of-way, with pathway improvements installed along the inland extent of right-of-way, and road prism reduced in width to the extent feasible and either relocated as far inland as possible or removed in its entirety (i.e., closed to through traffic); and (e) combinations and permutations of all of these.

In its final Environmental Impact Statement (EIS), and thus in its final consistency determination (because the final EIS is incorporated by reference), ACOE did not thoroughly evaluate such project alternatives, making it more difficult to completely evaluate non-armoring alternatives to address the danger from erosion at the East Cliff Drive project area.

Staff continues to believe that there are alternatives, or more appropriately a combination of alternatives, that could help to lessen the short-run danger to existing structures at this location without shoreline armoring. These include such relatively minor actions such as installing better drainage control structures and planting vegetation on exposed bluff soils, and more major actions such as immediate relocation of portions of the road and the underlying utilities. Without a complete analysis, though, it is not clear to what degree such alternatives would be able to increase the effective life of the setback established, and it is also not clear to what degree these projects would fall under the scope of ACOE's authorities and funding. It may also be that regional programs to promote beach formation (through beach nourishment, sand bypass/corrective measures at the Harbor, etc.) could reduce both the rate of erosion and the need for armoring. However, thorough information has not been developed on these measures (and permutations of them) and there remains a certain amount of uncertainty in the evaluation of these options.

Based on the information available, Staff has concluded that the ACOE seawall proposal generally is the most appropriate response to erosion danger at East Cliff Drive at the current time. This is partially in acknowledgement of the significance of the East Cliff Drive blufftop recreational area, and the fact that "buying time" through the use of soft alternatives to increase the effective life of the setback also means that this recreational area will be correspondingly reduced in size as the bluff continues to erode. At

some point, assuming current California law regarding existing structures, and lacking a substantial social and financial commitment to planned retreat, armoring would be installed to protect the row of houses directly inland of East Cliff Drive. To the extent that space still existed in the right-of-way seaward of these houses, there would still be some through recreational access, but its value would be diminished because the amount of space would be significantly less. The larger the right-of-way, the more space for public recreational enhancements such as trails, overlooks, benches, picnic areas, restrooms, et cetera. The amount of space, and the stability of it over the long-term, is also directly related to the amount of improvements that may be pursued for it.

Allowing the seawall is also in acknowledgement of the fact that, at the current time, the option of planned retreat is not feasible in this individual project context, particularly given the lack of a more comprehensive statewide commitment to such a policy. Although this concept is certainly valid and worthy of ongoing discussion, there is no implementing mechanism at the current time, and a project-by-project application is not likely to prove successful here. If planned retreat as a statewide or larger regional policy were on the near horizon, then it may make sense to wait and "buy time" here (by increasing the effective lifetime of setbacks). Because it isn't, buying time will only serve to reduce public space; space that will represent lost opportunity costs should rolling setbacks and planned retreat not come to fruition. If, in the future, planned retreat becomes an actual regional or statewide program, undoing the seawall here (to allow for planned retreat) will be a very small part of a much larger program and thus not irreversible.

That said, as with all armoring that "fixes" the bluff location on an eroding shoreline, and where sea level continues to rise, it is expected that this seawall will eventually result in the loss of the beach and offshore surfing area. It is unknown how long this process will take (and ACOE did not evaluate such long-term impact). Sea level rose approximately one foot over the past one hundred years in the Monterey Bay area. At that rate, or at a higher rate (that could result from global warming), the beach area will disappear relatively quickly (as it is not very large to begin with), but the length of time until the surf break will be impacted is less clear. As seen with daily tidal fluctuations, a foot or two difference in sea level can have a tremendous impact in surfing wave quality. The surf may disappear within a hundred years, or it may be longer, or it may be shorter. Again, ACOE did not evaluate these long-term surfing and beach impacts.

Staff has recommended a series of conditions to be applied to the project. These include a series of seawall design changes (to limit seaward encroachment, to reduce the extent of the armoring, to camouflage stairways and railings, to ensure proper surface treatment, to limit and camouflage drain outlets) and mitigations (including monitoring of the surf break, an evaluation of sand budget improvement mechanisms, and enhanced filtration and treatment of runoff) to better address Chapter 3 coastal resource impacts.

In sum, the project presents a difficult decision. If the seawall is constructed, then the East Cliff Drive blufftop recreational area will be protected, but beach and surfing access will be incrementally diminished over some amount of time. If the seawall is not constructed, the East Cliff Drive parkway area will be incrementally lost in the near-term, but beach and surfing access will be unaffected by a

seawall here during that time. At some point, the existing regulatory framework is such that armoring would be allowed to protect either what remains of East Cliff Drive and/or the inland residences, as required by the Coastal Act. At that point, the same beach and surfing impacts would occur (and continue from that point on into the long-term). Whether the wall would be constructed now or a decade or so from now, would appear to have very little difference on the surf. This is because the limited additional horizontal space that would be created by allowing erosion of East Cliff Drive over the short time has much less impact on the surf break than does the vertical component of sea-level rise. Viewshed impacts would exist in all cases.

The project sponsor (i.e., the Santa Cruz County Redevelopment Agency) has committed to the alternative being pursued by the ACOE and that is before the Commission as a consistency determination. Given the existing erosion danger to East Cliff Drive, and the lack of non-structural alternatives to address this danger over the longer run, Staff is recommending that the Commission conditionally concur that the proposed project is in conformance with Chapter Three of the Coastal Act. If ACOE objects to the conditions (and doesn't incorporate them into the project) it will be the equivalent of the Commission objecting to the consistency determination

As so conditioned, Staff recommends that the Commission concur with the consistency determination.

Report Contents

Exhibit D: East Cliff Drive Parkway Project Conceptual Plans
Exhibit E: Photo Examples of Soil Nail Wall Projects
Exhibit F: U.S. Army Corps of Engineers' Consistency Determination
Exhibit G: Commission Staff Request for Time Extension to Allow For Public Review of EIS/EIR
Exhibit H: Commission Staff Request for Time Extension to December
Exhibit I: Commission Staff Comments on the NOP
Exhibit J: Commission Staff Comments on the Draft EIS/EIR
Exhibit K: Lowered Seawall/Grade Separated Path Cross Section Example

1. Federal Agency's Consistency Determination

ACOE Determination

ACOE (San Francisco District) has determined that the seawall project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), and has submitted this determination to the Commission, requesting the Commission's concurrence (see exhibit F).[1] The Commission can either concur with ACOE's determination, conditionally concur with it, or object to it.[2]

Project Procedural History

The Commission has been tracking the Pleasure Point seawall project for many years, and Commission staff have provided directive comments on it (and its predecessors) through letters, meetings with the County and ACOE, and participation at community forums for almost a decade. These comments were first distilled in Notice of Preparation (NOP) comments in early 2001 (see exhibit I), at which time it was anticipated that the project would require a typical CDP process.[3] Subsequently, Commission staff was informed that this was an ACOE project subject to federal consistency regulations, and in late March 2003, ACOE submitted its consistency determination at the same time as the draft EIS/EIR was distributed for public review. Based upon the submittal date of March 13, 2003, the Commission was originally required to review ACOE's determination by May 17, 2003.

However, the Pleasure Point seawall presents complicated planning issues, and has been the subject of tremendous interest and controversy for years. At Commission staff request (see exhibit G), ACOE extended the deadline for the Commission to review this matter in order to allow for public comment on

[1] Note that ACOE's consistency determination incorporates by reference their environmental impact statement (EIS) and their detailed project report (DPR) for the project. The EIS and DPR are together about 2,000 pages of text and graphics, and are not reproduced here.

[2] In coastal development permit (CDP) review terms, "concurrence" is akin to approval, "conditional concurrence" is like approval with conditions, and "objection" is similar to denial of a CDP.

[3] Note that the NOP was the first official opportunity to provide written feedback on the current seawall project. At that time, the project was not an ACOE project. Rather, it was a Santa Cruz County proposal and it was anticipated that it would proceed through normal CDP processes.

the draft EIS/EIR (and ACOE's responses) to be available for the Commission's deliberations.[4] Commission staff again provided detailed comments on the draft EIS/EIR (see exhibit J). The final EIS/EIR was received by Commission staff on October 8, 2003. Despite requests that ACOE allow this matter to be scheduled for a December hearing to allow maximum public participation,[5] and to allow Commission staff adequate time to review the roughly 1,500 page final EIS/EIR, the Corps declined to allow the matter to be scheduled for December.[6]

2. Applicable Legal Authorities

Section 307 of the Coastal Zone Management Act (CZMA) provides in part:

> *(c)(1)(A) Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.*

In addition, 15 CFR § 930.4 provides, in part, that:

> *(a) Federal agencies, … should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a Federal agency's final decision under Subpart C … would allow the State agency to concur with the federal action. If instead a State agency issues a conditional concurrence:*
>
> *(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency's concurrence letter shall also inform the parties that if the requirements of paragraphs (a)(1) through (3) of the section are not met, then all parties shall treat the State agency's conditional concurrence letter as an objection pursuant to the applicable Subpart…; and*
>
> *(2) The Federal agency (for Subpart C) … shall modify the applicable plan [or] project proposal, … pursuant to the State agency's conditions. The Federal agency … shall immediately notify the State agency if the State agency's conditions are not acceptable; and*
>
> …

[4] Otherwise, the Commission would have been forced to act on the consistency determination before any public comments on the DEIS/DEIR were received or reviewed/addressed.

[5] The Commission's December meeting is in San Francisco, which is as close to the Pleasure Point area as the Commission is scheduled to meet until March 2004 in Monterey.

[6] Commission staff requested the matter be postponed multiple times, and, at the Corps' request, ultimately put the request in writing (see exhibit H). The Corps declined to grant the extension.

(b) If the requirements of paragraphs (a)(1) through (3) of this section are not met, then all parties shall treat the State agency's conditional concurrence as an objection pursuant to the applicable Subpart.

3. Standard of Review

The standard of review for federal consistency determinations is Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If an LCP that the Commission has certified and incorporated into the CCMP provides development standards that are applicable to the project site, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated a certified LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. In this case, the Commission has certified Santa Cruz County's LCP but has not incorporated it into the CCMP. Thus, to the extent relevant, the County's certified LCP can provide background context for the decision being made.

4. Consistent to the Maximum Extent Practicable

Section 930.32 of the federal consistency regulations provides, in part, that:

(a)(1) The term ''consistent to the maximum extent practicable'' means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

The Commission recognizes that the standard for approval of Federal projects is that the activity must be "consistent to the maximum extent practicable" (Coastal Zone Management Act Section 307(c)(1)). This standard allows a federal activity that is not fully consistent with the CCMP to proceed, if compliance with the CCMP is "prohibited [by] existing Federal law applicable to the Federal agency's operations" (15 C.F.R. § 930.32). The Army Corps of Engineers did not provide any documentation to support a maximum extent practicable argument in its consistency determination or in any subsequent documents. Therefore, there is no basis to conclude that existing law applicable to the Federal agency prohibits full consistency.

5. Staff Recommendation

Staff recommends that the Commission, after public hearing, **conditionally concur** with the with the Army Corps of Engineers' consistency determination.

Motion. I move that the Commission conditionally concur with consistency determination CD-021-03.

Staff Recommendation of Conditionally Concurrence. Staff recommends a **yes** vote on this

motion. Passage of this motion will result in a conditional concurrence with the Army Corps of Engineers' determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution To Conditionally Concur With Consistency Determination. The Commission hereby conditionally concurs with the consistency determination made by the Army Corps of Engineers on the grounds that the project would be consistent with the enforceable policies of the CCMP, provided the Army Corps of Engineers agrees to modify the project consistent with the condition specified below, as provided for in 15 CFR §930.4.

6. Conditions

1. **Rip-Rap Prohibited.** Rip-rap seaward of the seawall and its stairways shall be prohibited. The seawall and stairway base shall be embedded to a depth sufficient to avoid the need for rip-rap, and the downcoast end shall incorporate an adequate end wall so that rip-rap is confined on the O'Neill property within its permitted configuration. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director.

2. **Scour Apron.** The 5-foot scour apron at the base of the seawall shall be constructed flush with the top of the Purisima platform, and its surface shall be colored, contoured, and textured to match the Purisima Formation in which it is embedded. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director.

3. **Upper Limits of Seawall.** The top portion of the seawall shall be reduced in height by a minimum of 3 feet (i.e., its upper elevation shall be 3 feet below the East Cliff Drive paved recreational path elevation) and the pedestrian path area shall be incorporated into the lowered bench between the seawall and the paved recreational path. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director.

4. **Stairways.** The stairways shall be constructed so that the stair treads are inset approximately 3 feet below the seaward-most wall element of the stairway, and so that any stairway railings are not visible from the beach or offshore but rather are attached below the elevation of the seaward-most wall element. Any component of the stairways' exterior that protrudes seaward from the main seawall face shall be contoured in a non-linear manner designed to evoke natural bluff undulations. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director.

5. **Seawall Surfacing.** PRIOR TO SURFACING THE SEAWALL, the Corps shall provide a sample of the expected color and texture of the seawall surface, and color photos of a similar completed

project, for the review and approval of the Executive Director of the Coastal Commission. The final surface treatment shall mimic naturally occurring bluff undulations, protrusions, color, and texture.

6. **Drain pipes.** All drain pipe outlets in the seawall, including weep holes, shall be placed at the intersection of the Purisima Formation with the terrace deposits (i.e., at the sculpted concrete bench), shall be spaced unequally (and not equidistant from one another), and shall be camouflaged with overhanging or otherwise protruding sculpted concrete so that the drain pipe outlet is not visible from East Cliff Drive above and is not visible from the beach and/or from the ocean. Where energy dissipation is necessary due to flow volume, such energy dissipation devices shall themselves be hidden behind and/or in the sculpted concrete in the same manner as the drain pipe outlets. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director.

7. **Water Quality.** All existing drainage outlets shall be consolidated into the fewest number feasible. Prior to the commencement of construction, the Corps shall submit an evaluation of drain pipe consolidation feasibility to the Executive Director for review and approval. All drainage shall be filtered and treated (to remove typical urban runoff pollutants)[7] by an engineered "finishing" system equivalent to a Stormwater Management Inc. *StormFilter* system sized for the volume of runoff produced from irrigation and from each and every storm and/or precipitation event up to and including the 85th percentile 24-hour runoff event for volume-based BMPs and/or the 85th percentile, 1-hour runoff event (with an appropriate safety factor) for flow-based BMPs, prior to its use for on-site landscape irrigation and/or discharge offsite. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Army Corps of Engineers shall submit revised project plans that show these changes for the review and approval of the Executive Director, and provide all supporting technical information (e.g., brochures, technical specifications, etc.).

8. **Surf Monitoring.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Corps shall submit, for Executive Director review and approval, a plan for monitoring impacts of the seawall on the Pleasure Point surfing area, extending from Rockview Drive to 41st Avenue, for as long as a seawall remains in existence. The monitoring plan shall specify methods for evaluating the seawall's influence on the quality of surfing waves, among other ways, by recording changes in the patterns of wave energy within the study area. Data collection, observation, and survey methods shall address, at a minimum, general quality of surfing waves, water depth, beach profile, shoreline configuration, and sand deposition patterns. The plan shall also identify methods for observing and measuring the influence of any documented changes in shoreline characteristics, including the constructed seawall, on the location, duration, and shape of breaking waves, during different swell conditions. At a minimum, such observations shall be made at least one time per year, during tides of 4.5 to 5.5 feet,

[7] Typical urban runoff pollutants describes constituents commonly present in runoff associated with precipitation and irrigation. Typical runoff pollutants include, but are not limited to: paints, varnishes, and solvents; hydrocarbons and metals; non-hazardous solid wastes and yard wastes; sediment from construction activities (including silts, clays, slurries, concrete rinsates, etc.); ongoing sedimentation due to changes in land cover/land use; nutrients, pesticides, herbicides, and fertilizers (e.g., from landscape maintenance); hazardous substances and wastes; sewage, fecal coliforms, animal wastes, and pathogens; dissolved and particulate metals; and other sediments and floatables.

for each of the following conditions, as reported by the National Weather Service: northwest swell of 6 feet, with a minimum period of 17 seconds; west swell of 6 feet, with a minimum period of 17 seconds; and, southwest swell of 3 feet, with a minimum period of 17 seconds.

All monitoring observations shall be recorded, and photo documentation provided. Reports that clearly detail the results of the monitoring shall be submitted every five years, for the review and approval of the Executive Director. The reports shall evaluate the monitoring data, identify any adverse impact to the quality of surfing waves attributed to the seawall, and provide recommendations for feasible responses to address identified impacts.

9. **Sand Supply Study.** WITHIN THREE YEARS OF COMPLETION OF THE SEAWALL, the Corps shall submit to the Commission a study of the feasibility of implementing a regional sand supply program in the Santa Cruz Littoral Cell to promote beach formation in the Live Oak beach area. At a minimum, such study shall identify mechanisms (including structural, programmatic, and funding requirements) to increase the amount of sand in the shoreline sand supply system through sand import, and shall evaluate corrective measures to improve the transport of sand around the Santa Cruz Harbor jetties, and potential modifications to the jetties themselves. The report shall make recommendations for implementation actions that would address sand supply to beaches in the Live Oak area.

10. **Project Sponsor.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Corps shall submit written confirmation to the Executive Director of the Commission that the Project Sponsor agrees to Conditions 1-9 of this Consistency Determination (CD-021-03).

Findings and Declarations

The Commission finds and declares as follows:

7. Project Location

The proposed project is located on the bluff and beach area fronting East Cliff Drive between 32nd and 36th Avenues in the Pleasure Point portion of the unincorporated Live Oak beach area of Santa Cruz County.

Santa Cruz County Regional Setting

Santa Cruz County is located on California's central coast and is bordered to the north and south by San Mateo and Monterey Counties (see exhibit A). The County's shoreline includes the northern half of the Monterey Bay and the rugged north coast extending to San Mateo County along the Pacific Ocean. The County's coastal zone resources are varied and oftentimes spectacular, including the Santa Cruz Mountains coastal range and its vast forests and streams; an eclectic collection of shoreline environments ranging from craggy outcrops to vast sandy beaches (in both urban and more rural

locations); numerous coastal wetland, lagoon and slough systems; habitats for an amazing variety and number of endangered species; water and shore oriented recreational and commercial pursuits, including world class surfing areas; internationally renowned marine research facilities and programs; special coastal communities; vast State Park lands; and the Monterey Bay itself. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore of the County became part of the Monterey Bay National Marine Sanctuary – the largest of the 12 such federally protected marine sanctuaries in the nation.

Santa Cruz County's rugged mountain and coastal setting, its generally mild climate, and its well-honed cultural identity combine to make the area a desirable place to both live and visit. As a result, the County has seen extensive development and regional growth over the years that the California Coastal Management Program has been in place. In fact, Santa Cruz County's population has more than doubled since 1970 alone with current census estimates indicating that the County is home to over one-quarter of a million persons.[8] This level of growth not only increases the regional need for housing, jobs, roads, urban services, infrastructure, and community services, but also the need for park areas, recreational facilities, and visitor serving amenities. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, and most significantly closer than that, coastal zone resources are a critical element in helping to meet these needs. Furthermore, with coastal parks and beaches themselves attracting visitors into the region, an even greater pressure is felt at coastal recreational systems and destinations like Pleasure Point. With the Santa Cruz County shoreline and beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the large population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Santa Cruz County.

Live Oak is part of a larger area including the Cities of Santa Cruz and Capitola that is home to some of the best recreational beaches in the Monterey Bay area. Not only are north Monterey Bay weather patterns more conducive to beach recreation than the rest of the Monterey Bay area, but north bay beaches are generally the first beaches accessed by visitors coming from the north of Santa Cruz. With Highway 17 providing the primary access point from the north (including from San Francisco and the Silicon Valley) into the Monterey Bay area, Santa Cruz, Live Oak, and Capitola are the first coastal areas that visitors encounter upon traversing the Santa Cruz Mountains (see exhibit A). As such, the Live Oak beach area is an important coastal access asset for not only Santa Cruz County, but also the entire central and northern California region.

Live Oak Beach Area

Live Oak is the name for the unincorporated segment of Santa Cruz County located between the City of Santa Cruz (upcoast) and the City of Capitola (downcoast). The Live Oak coastal area is well known for excellent public access opportunities for beach area residents, other Live Oak residents, other Santa Cruz County residents, and visitors to the area. Walking, biking, skating, viewing, surfing, fishing, sunbathing, and more are all among the range of recreational activities possible along the Live Oak

[8] Census data from 1970 shows Santa Cruz County with 123,790 persons; California Department of Finance estimates for the 2000 census indicate that over 255,000 persons reside in Santa Cruz County.

shoreline. In addition, Live Oak also provides a number of different coastal environments including sandy beaches, rocky tidal areas, blufftop terraces, and coastal lagoons (such as Moran Lake). Live Oak includes a number of defined neighborhood and special communities within it, including the larger Pleasure Point area, for which this site is located at the entry way of sorts as one travels downcoast towards Capitola. These varied coastal characteristics make the Live Oak shoreline unique in that a relatively small area can provide different recreational users a diverse range of alternatives for enjoying the coast. By not being limited to one large, long beach, or solely an extended stretch of rocky shoreline, the Live Oak shoreline accommodates recreational users in a manner that is typical of a much larger access system.

Primarily residential with some concentrated commercial and industrial areas, Live Oak is a substantially urbanized area with few major undeveloped parcels remaining. Development pressure has been disproportionately intense for this section of Santa Cruz County. Because Live Oak is projected to absorb the majority of the unincorporated growth in Santa Cruz County, development pressure will likely continue to tax Live Oak's public infrastructure (e.g., streets, parks, beaches, etc.).[9] Given that the beaches are the largest public facility in Live Oak, this pressure will be particularly evident in the beach area.

Pleasure Point

Pleasure Point is the name of the predominantly residential area located roughly between upcoast Moran Lake and downcoast 41st Avenue (at the "Hook" where it transitions to the Opal Cliffs area). Pleasure Point is also the name of the offshore surfing area between Soquel Point (aka "Pleasure Point") and the Hook.[10] This area has an informal, beach community aesthetic and ambiance that clearly distinguishes it from inland commercial areas as well as the downcoast Opal Cliffs neighborhood towards Capitola. Housing stock is eclectic, and densely crowded together. Though certainly in the midst of a gentrification that has intensified over the last decade or so, the Pleasure Point area retains its informal charm and appeal, much of it rooted in the intrinsic relationship between the built environment – and its inhabitants – and the surfing area offshore.

Pleasure Point is an extremely popular recreational surfing destination that is well known around the world. It is not uncommon to see more than 150 surfers in the water, and small crowds lining East Cliff Drive both enjoying the shoreline view and watching the surfing below.

There are two general areas within Pleasure Point where there are not houses between the public road and the sea. One of these is at the Rockview coastal accessway (at Soquel Point proper) and the other is the main Pleasure Point panorama that opens up when one travels along East Cliff between about 32nd

[9] The LCP identifies Live Oak at buildout with a population of approximately 29,850 persons; based on the County's recreational formulas, this corresponds to a park acreage of 150-180 acres. Though Live Oak accounts for less than 1% of Santa Cruz County's total acreage, this projected park acreage represents nearly 20% of the County's total projected park acreage.

[10] Of course, there are a number of individually named breaks within this area (like Sewer Peak, First peak, Second Peak, 38th, etc.), but the overall surf area is known as Pleasure Point.

and 41st Avenues.[11] These areas are extremely popular recreational use areas for immediate Pleasure Point residents as well as visitors from other parts of Live Oak, other parts of the County, and from further away. East Cliff Drive is a component of the California Coastal Trail, and a component of the Monterey Bay Sanctuary Scenic Trail, and is used by a significant number of people (i.e., joggers, bicyclists, walkers, etc.). East Cliff Drive was changed to one-way vehicular access in 1995 (in response to erosion of portions of it) with the area nearest the bluffs marked out as a multi-use recreational trail by a series of plastic bollards. The East Cliff Drive corridor from 32nd through 41st Avenues provides an amazing coastal vista, and many persons also enjoy this view by parking in the limited number of parking bays and/or by simply driving through and taking in the view.

Proposed Seawall Location

The seawall will extend along the bluffs from roughly 32nd Avenue through to 36th Avenue. The seawall will start at the County's Pleasure Point Park (at the corner of East Cliff Drive and 32nd Avenues) and extend through to a pile of rip-rap boulders fronting an existing residential structure (O'Neill residence) clinging to the bluffs seaward of East Cliff. The bluffs in the project area are approximately 30 feet tall, with the lower 10 feet or so made up of Purisima Formation sandstone and the upper portion terrace deposits. This bluff area includes two cribwalls (i.e., retaining walls) in the upper bluff, several wooden protective barriers at the blufftop edge (where portions of the road have been lost), and is fronted by approximately 2,800 to 4,800 cubic yards of concrete rubble that appears strewn along the beach throughout the project area.[12] There is an abandoned restroom and an existing stairway at the foot of 35th Avenue and it is fronted with an estimated 1,200 cubic yards of rip-rap.[13] There is an informal "stairway" of sorts consisting of a series of retaining walls nearest to 32nd Avenue that is a primary entrance point for surfers. The bluff is irregular, showing evidence of significant rilling and uneven erosion, with a slope ranging generally from 45 to 60 degrees.

See exhibit A for location maps and project area photos.

8. Project Description

Pleasure Point Seawall

ACOE proposes to remove the existing restroom and coastal access stairway near 35th Avenue, and to construct a concrete seawall covering all of the bluff area between Pleasure Point Park and the residence at the foot of 36th Avenue, a linear distance of roughly 1,100 feet. Existing crib walls would be concealed behind the seawall. Existing concrete rubble would be removed, with some of it incorporated into seacave fills and concealed behind the seawall, and the remainder disposed of off site. Existing rip-rap would be relocated within the project area (i.e., not removed).

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[11] There are three intervening residential structures seaward of East Cliff Drive interspersed along this stretch, each blocking through views and access in different ways.

[12] The Commission has been unable to establish a history, permit or otherwise, for these materials, and ACOE declined to provide any information when requested.

[13] Ibid.

The seawall will be keyed into the underlying Purisima Formation to -3 NGVD, and will extend to the top of the bluff (to approximately +34 NGVD). A five-foot wide (extending seaward) concrete scour apron will be incorporated into the keyway. The plan for the proposed seawall includes a series of horizontal steel tieback rods (i.e., "soil nails"[14]) that will be drilled about 21 feet into the bluffs at 6 foot on-center (both horizontal and vertical) spacing. The steel rods will be fastened at the bluff face with wire mesh onto which concrete will sprayed, about 2 feet thick, and sculpted and colored to approximate a natural bluff landform (see photo simulation of the proposed seawall in exhibit C, and see photos of examples of completed "soil nail" wall projects in exhibit E). Two concrete stairways incorporated into the seawall will be constructed; a new stairway near Pleasure Point Park and a replacement stairway (for the one removed) near 36th Avenue. Existing storm drain outlets would be retained, with the exception that two drainage pipes near 35th Avenue would be replaced by a single outlet pipe. Some additional blufftop space would be created by backfilling behind the seawall structure in limited areas. See project plans in exhibit B.

Construction would require heavy equipment be lowered to the beach by a crane to excavate the seawall keyway and footing and to move concrete and rip-rap in the project area. Excavated materials would be removed offsite. The project would be constructed on State Lands and would require a State Lands lease, and would result in fill of the Sanctuary, thereby requiring Sanctuary approval as well.

ACOE estimates that the seawall project will cost $7 million, and take about half a year to construct.

Related Development

There are two other related projects that are not a part of this consistency determination, but are intimately related to the Pleasure Point seawall.[15]

The first is a Santa Cruz County proposal to reconstruct the East Cliff Drive right-of-way between 32nd and 41st Avenues with an improved recreational trail and other related amenities (park and restroom improvements at Pleasure Point Park, increased parking spaces, landscaping, benches, etc.). This East Cliff Drive project is called the "East Cliff Drive Parkway" project, and it is dependent upon ACOE's seawall project to proceed. The East Cliff Drive Parkway is not an ACOE project and it is not a part of this consistency determination. The parkway project would require a CDP from the County. See exhibit D for conceptual plans of the parkway project that show how it physically relates to the seawall.

The second project is a seawall fronting the Hook public access overlook (the Hook seawall) at the foot of 41st Avenue. ACOE estimates that the Hook seawall would be about 300 feet in length, and that it would be the same type of seawall design/construction as proposed here. It is not clear at this time whether the Hook seawall would be an ACOE project or a County project or something else. The Hook seawall is not a part of this consistency determination. The Hook seawall project would require a

[14] Soil nails are structural, high-strength rebars, grouted into drilled holes and inclined slightly downward into the soil. The soil nails stabilize a bluff by improving the continuity of the overall mass and providing anchorage into the more stable soil zone behind the active mass.

[15] Note that the ACOE EIS was actually a combined EIS/EIR that covered the 3 related projects.

separate Commission consistency determination and/or a CDP, depending upon ACOE's level of involvement in it.

9. Concurrence Determination

A. Geologic Conditions and Hazards

1. Applicable Policies

Coastal Act Section 30235 addresses the use of shoreline protective devices such as that proposed:

> ***30235.*** *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.*

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and to avoid landform altering protective measures in the future. Section 30253 provides, in applicable part:

> ***Section 30253.*** *New development shall:*
>
> *(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

Among other things, Coastal Act Section 30233(a) lists the type of development that is allowed to fill open coastal waters (as is proposed here). Section 30233(a) states:

> ***Section 30233(a).*** *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

2. Analysis of Consistency with Applicable Policies

A. Filling Coastal Waters

The ACOE seawall requires fill below the mean high tide line (i.e., fill of coastal waters). Section 30233 of the Coastal Act identifies eight allowable uses for the dredging, diking, and filling of coastal waters; seawalls are not one of the listed uses. As a result, a seawall is prohibited in coastal waters by Section 30233(a). However, Section 30235 of the Coastal Act requires the Commission to approve a seawall if it is necessary to protect an existing structure and if it meets the other requirements of that section. Section 30235 clearly anticipates dredging, diking, and filling of coastal waters for seawalls and is a more specific policy than Section 30233(a) in this regard. In other words, Section 30235 of the Coastal Act requires the Commission to approve seawalls in certain circumstances, even though such activities may not comply with the allowable-use test of Section 30233(a) of the Coastal Act. Thus, to the extent Section 30235 requires that the Commission approve this project, the more specific direction of Section 30235 would override in this case.[16]

B. Section 30235 – Allowing Shoreline Armoring

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and

[16] Note that other coastal resource issues associated with such fill are addressed in subsequent findings. Note too that the requirements of Section 30233(a) as regards mitigating impacts and identifying the last environmentally damaging feasible alternative would still apply. The intent of this finding is to explain the distinction between Sections 30233(a) and 30235 as it relates to seawalls occupying coastal waters. Giving precedence to the more particular provisions of Section 30235 over the more general provisions of sections 30233(a) and is in accord with generally applicable principles of California law. See, for example, Civil Code §3534 ("Particular expressions qualify those which are general").

other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

Under Coastal Act Section 30235, a shoreline structure must be approved if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline-altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate its adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary, while the fourth question applies to mitigating some of the impacts from it.

1. Existing Structure to be Protected

For the purposes of shoreline protective structures, the Coastal Act distinguishes between development that is allowed shoreline armoring, and development that is not. Under Section 30253, new development is to be designed, sited, and built to allow the natural process of erosion to occur without creating a need for a shoreline protective device. Coastal development permittees for new shorefront development are thus making a commitment to the public (through the approved action of the Commission, and its local government counterparts) that, in return for building their project, the public will not lose public beach access, offshore recreational access, sand supply, visual resources, and natural landforms, and that the public will not be held responsible for any future stability problems. In other words, coastal zone development approved and constructed since the Coastal Act should not require shoreline protection in order to "assure stability and structural integrity" because it was constructed with adequate setbacks and/or other measures in order to negate the need for future armoring.

Coastal Act 30235 allows for shoreline protection in certain circumstances (if warranted and otherwise consistent with Coastal Act policies) for "existing" structures. One class of "existing structures" refers to those structures in place prior to the effective date of the Coastal Act. Coastal zone development approved and constructed prior to the Coastal Act went into effect was not subject to Section 30253 requirements. Although some local hazard policies may have been in effect prior to the Coastal Act, these pre-Coastal Act structures have not necessarily been built in such a way as to avoid the future need for shoreline protection (in contrast to those evaluated pursuant to Section 30253). Accordingly, Coastal Act 30235 allows for shoreline protection to be considered for these types of existing structures, where "existing" means it was permitted development prior to the Coastal Act.

A second class of existing structures refers to those structures that have been permitted since the effective date of the Coastal Act. There has long been discussion that these structures should not constitute "existing structures" for purposes of Section 30235 because they were developed pursuant to 30253 (and/or similar LCP) standards so as not to require shoreline armoring in the future. However, the Commission has generally interpreted "existing" to mean structures existing at the time the armoring

proposal is being considered, whether these structures were originally constructed before or after the Coastal Act, and has not limited consideration of armoring only to those structures constructed prior to the Coastal Act.

And finally, in a limited number of cases, the Commission has required applicants for blufftop structures to waive any right to a seawall pursuant to Section 30235; in other words to stipulate that they are not existing structures for 30235 purposes because the structures have been sited and designed to not need shoreline armoring in the future (pursuant to Section 30253 and LCP counterpart policies).[17]

In the East Cliff Drive case, the structures for which protective armoring is being considered are East Cliff Drive, including the recreational component of it nearest the bluff edge, and the subsurface utilities. These structures pre-date the Coastal Act, and they exist today. These structures can be described by both the first and second class of existing structure described above, and constitute existing structures for purposes of Section 30235.

2. Danger from Erosion

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not define the term "in danger." There is a certain amount of risk in maintaining development along a California coastline that is actively eroding and can be directly subject to violent storms, large waves, flooding, earthquakes, and other hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is a matter of the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring pursuant to Coastal Act Section 30235. Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make determinations as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to use or otherwise occupy within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the no project alternative).

Portions of East Cliff Drive in the project area have already fallen to the beach below. The road was reduced to one-way vehicular travel in 1995 in response to some such erosion events.[18] Currently, portions of the roadway are cordoned off and are off-limits to access due to the loss of bluff area below them (see photos in exhibit A). The collector sewer line below the East Cliff Drive pavement is approximately 15 to 20 feet from the bluff edge (on average) and as close as 11 feet in places. ACOE estimates long term average annual bluff retreat at approximately 1 foot per year, with the potential for larger bluff failures of up to 10 feet in a single episode. The Corps has concluded, and the Commission's geologist has agreed, that the existing structures are in danger from erosion in this case.

[17] For example, the Swenson residence just downcoast of Opal Cliffs in the City of Capitola (A-3-CAP-99-023, approved in 1999).

[18] Ultimately, this action was recognized by Santa Cruz County CDP 96-0029 in 1996.

As such, East Cliff Drive and the underground utilities qualify as existing structures in danger from erosion for purposes of Section 30235.

3. Feasible Protection Alternatives to a Shoreline Structure

The next Section 30235 test that must be met before a shoreline protective device can be approved is that the proposed armoring must be "required" to protect the existing threatened structure. In other words, shoreline armoring must be permitted if it is the only feasible alternative capable of protecting the structure.[19] Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened structures; sand replenishment programs; drainage and vegetation measures on the blufftop itself; and combinations of each. Because the no project alternative does not protect the existing endangered structures, it is not feasible in a 30235 protection sense.

In this case, ACOE's alternatives analysis is limited to options that involve varying degrees of armoring.[20] These include armoring only the Purisima Formation bedrock at the base of the bluff, armoring the Purisima as well as portions of the terrace deposits in several locations, and a combination of filling seacaves and constructing three artificial groins in the project area. Each of the Corps' evaluated alternatives share many of the same armoring-related impacts (to varying degrees) as the proposed project. Despite this limited alternatives analysis, it is important to consider whether there is a non-armoring alternative that could be pursued to avoid armoring impacts.

Drainage and landscaping

Although not analyzed by ACOE, a non-shoreline structure alternative typically considered by the Commission to respond to erosion is the use of selected bluff plantings and improved blufftop drainage controls. In this case, it is clear that some uncontrolled drainage over the top of the bluff has resulted in erosion of the bluffs. The bluff slopes are partially vegetated, but are primarily exposed marine terrace deposits. There is little doubt that drainage control and some planting would help reduce erosion at this location. However, the alternative of plantings and bluff drainage controls (in some combination) is not necessarily meant to be considered an equal alternative to a seawall or other more major form of bluff altering armor. In fact, this alternative is not generally seen as the ultimate "fix" or as a replacement for a "hard" armoring project such as that proposed. Rather, these types of "soft" alternatives can serve to extend the design life of setbacks by increasing bluff stability and slowing erosion. Thus, they must be understood as alternatives that can allow for natural processes to continue while simultaneously providing continued stability to the bluff. Given the active forces of erosion taking place unabated along the unarmored California coast, erosion will eventually (over the long-term) result in bluff retreat. At

[19] Note that Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

[20] Note that Commission staff requested a thorough evaluation of non-armoring alternatives in NOP comments dated March 6, 2001 and in draft EIS/EIR comments dated May 12, 2003. On this point the Corps final EIS/EIR indicates that the alternatives reviewed were in response to recommendations received during 2001 and 2002 scoping, and concludes that "the alternatives were selected to fulfill requirements of NEPA and CEQA [that] require evaluating a reasonable range of alternatives, not all possible options and permutations."

that point, in some cases, plantings and bluff drainage controls may not be adequate to address the erosion problem of themselves (particularly if they have already been implemented previously and their effect on bluff stability already factored into the analysis), and other alternatives could become more feasible (including wholesale relocation out of danger and even armoring of the coast).

Because East Cliff Drive is already being undermined, it does not appear that additional drainage controls and/or additional plantings by themselves would be able to stabilize the bluff to such a degree as to protect against additional loss of East Cliff Drive even from a relatively small bluff failure in one major storm event. This alternative alone would be insufficient to protect the existing threatened structures in this case. That said, aggressive planting and drainage controls have a utility in all other alternative project scenarios and should be included in any project here.

Relocation of Endangered Structures

Approximately 5 to 10 feet of the East Cliff Drive right-of-way between 32nd and 36th Avenue is covered by private landscaping and other development, and in places sidewalk. This space could be used to relocate the road and pedestrian trail component of it inland roughly 5 to 10 feet. It is unclear what this relocation would cost, and ACOE did not provide any requested information on this road relocation alternative. The subsurface utilities could also be moved inland, and ACOE estimates that the utility relocation would cost almost $1 million.[21] It is not clear whether the funding allotted to the seawall could be used instead for an alternative relocation project, and it is not clear to what extent that it would still be a ACOE project at that point.[22]

In any event, it is physically possible to relocate the road and utilities inland, and the cost would likely be some amount over $1 million (utilities and road work). Given that the seawall would cost $7 million on its own, this cost is not unreasonable in comparison.

However, the Commission's geologist has concluded that the 5 to 10 feet of additional setback gained for the road could be removed in one major storm event. Thus, relocation cannot be expected to protect the endangered structures for any significant length of time.

Relocation and Modification of Endangered Structures

In order for relocation inland to provide adequate protection (and setbacks), some portion of the existing road/recreational trail would need to be eliminated. In other words, the structures to be protected would need to be reduced in scope. ACOE did not evaluate this option.[23]

It is not clear how much of a bluff setback would need to be established in order to protect the

[21] Estimated by the Corps to cost $963,627.

[22] Although requested, ACOE declined to evaluate this option or identify how funding could be used. On the latter point, the final EIS/EIR indicates that "providing specific funding details is not necessary for purposes of the environmental review." This response, of course, does not address the analytic question of whether other feasible alternatives are available and the role that project funding requirements and options may play in this alternatives analysis.

[23] Ibid.

endangered structures in this case. The long-term average annual bluff retreat rate of 1-foot per year is informative, but it cannot be used alone to make this determination because the episodic nature of coastal erosion makes it difficult to predict bluff retreat over short time intervals. If a 25-foot setback were used (to allow for continued steady erosion and the maximum estimated large block failure occurring 2 years in a row), it appears unlikely that a reduced scale road and trail could be re-constructed inland.

Note that, technically, reducing and reconstructing a smaller version of the endangered structure does not "protect" it. If the reduced scale road and trail could be shown to provide similar public access and other use value as that that exists, then it may be possible to broadly construe "protect" in this regard. However, it is unclear how well such a project would or could function, and how much time would pass until the re-constructed project itself would be endangered, and ACOE has not provided information to allow thorough evaluation of this alternative. From available information, it appears that such a project would not protect the existing endangered structures.

Beach Formation

Regional programs to promote beach building (through beach nourishment, sand bypass/corrective measures at the Harbor, etc.) can reduce both the rate of erosion and the need for armoring. That said, during the types of episodic storms prevalent in Monterey Bay, such newly formed beach sands are likely to be moved offshore by wave action and not provide adequate protection against large storms. Likewise, this section of coast may have reached a new equilibrium inasmuch as a nearly maximum beach has formed upcoast of the Harbor. Sand appears to generally bypass this upcoast beach and the Harbor, although likely less so in winter when the beach is narrower, and the sand that is trapped in the Harbor channel is routinely dredged and deposited on the downcoast beach for nourishment. Modification of the project to include the use of some upcoast (of the Harbor) beach sand to nourish downcoast beaches and/or to include some form of active beach nourishment (to increase the volume of sand in the littoral system) would likely help build beaches in the project area, but the extent to which this would protect endangered structures here is unclear. This type of alternatives information, although requested, has not been developed by ACOE and thus there is a certain amount of uncertainty in terms of the degree of protection that could be provided in this regard. Based on available information, it does not appear that such options could protect endangered structures at this location.

Planned Retreat

The concept of planned retreat advocates that instead of allowing continued armoring, the shoreline should be allowed to retreat naturally. In this way, as the shoreline naturally erodes and sea level rises, new beaches would form (as bluffs naturally crumble and contribute sand to beaches over time). Beach formation would partly be assisted by the sand generating material in the "freed" bluffs themselves, but more importantly there would be space for the natural equilibrium between the shoreline and the ocean to establish itself and beaches formed.

The primary difficulty with a planned retreat strategy is that much of the armored shoreline is currently fronting development, residential and otherwise, that would eventually need to be retired (e.g.,

purchased, with armoring (if any) and development on it removed) if the shoreline were to be allowed to retreat naturally. The cost of retiring such development statewide (or even in identified sub-regions) would be extremely high, particularly in urban areas of the state (such as the project location) where some of the most expensive homes and real estate are located at the shoreline's edge.[24] Of course, in areas where planned retreat were formally codified, and where the costs of maintaining development in such high hazard areas were thus internalized, these properties and the developments on them would become less expensive as a result.

There are, of course, multiple permutations of a planned or managed retreat policy. These include using beach nourishment to slow coastal erosion, temporary protection measures during winter storms (e.g., removable walls, sand berms, etc.), and adequate setbacks for new development. On the latter point, it is noted that the Coastal Act requires that new development to be set back a sufficient distance to allow natural erosion to take place without reliance on future armoring. Typically, the setback distance is established based on an estimated economic lifetime of the development (typically 50 to 100 years). However, history has proven that coastal real estate does not have such an economic lifetime. Rather, the development lifetime for shoreline real-estate (given current policies and the lack of internalization of the true "costs" of development in high hazard areas) is essentially infinite with armoring. Over time, even well set back development will require some manner of shoreline protection. This is the case even if these structures were built to a one-hundred year setback, and even if the need does not arise for one-hundred years.[25] In any case, to date, the Commission and its local government partners have not systematically accounted for the second part of the one-hundred year setback equation – namely, enforcing the identified economic lifetime for such high hazard area development.[26] More troubling, the Commission is being faced with applications for extremely well-engineered structures designed to withstand long-term erosion not through the use of setbacks, but rather by using large, deeply embedded piers designed to elevate the useable structural areas higher than expected storm events. If such structures can withstand long term erosion and sea level rise (as they are being designed to do), they will eventually be severed from the shoreline as it continues to retreat – becoming much like small oil drilling platforms dotting the shoreline.

In this case, ACOE did evaluate planned retreat as it relates to the 32nd Avenue through 36th Avenue project area. The idea in this case would be that over the long run the 12 – 14 inland residences would be acquired, demolished, and the public improvements relocated inland as necessary in response to shoreline erosion. Of course, this "rolling setback" would not be a one-time cost, but rather would

[24] Part of the reason that such property and the development on it is so costly is that the true costs of maintaining such development are not entirely internalized by such property owners. For example, the cost to the people of the State (and visitors to it) from a long term loss of beach due to private armoring is not borne by these property owners. Likewise, low- and no-interest government-backed loans (e.g., FEMA), and even disaster replacement grants, are available to property owners in such high hazard areas, where the public bears the cost of providing grants and/or making funds available for free and/or at less than market loan rates. If these true costs were internalized, these properties and the development on them would be less expensive.

[25] Note that the Commission and local government is increasingly being confronted with applications for armoring to protect development that was set back for one-hundred years of erosion, but that is already in danger. In some cases, the subsequent armoring application follows within a few years.

[26] That is, requiring such development to be moved or removed after the end of its identified lifetime.

continue in response to continuing natural erosion. In its evaluation, ACOE dismissed planned retreat based on the high cost of acquiring the directly inland residences at this location and relocating public improvements inland,[27] and also dismissed it based on the assertion that such a program "could not be reasonably devised for the project area alone but would need to be addressed on a policy level and implemented on a regional basis, in concert with other land management agencies." Regarding the former, shoreline fronting development's value is artificially inflated due to the lack of internalization of hazardous location costs (as discussed above). Costs can also be spread over time just as with any large-scale public investment. That said, it would take large-scale programmatic change to have these costs internalized appropriately. It is clear that inland acquisition at this location and at this time would be extremely costly.

As asserted by the Corps, a successful planned retreat strategy would involve a much larger geographic region than the project area here. Much of urbanized Santa Cruz County up and downcoast is armored. These areas, too, would likely need to be part of a planned retreat strategy. Although it is unclear at the current juncture whether planned retreat in California will come to fruition, it is worthy of consideration and broader discussion. The beaches of California, including those here in Santa Cruz County, are an irreplaceable resource. If they are going to be lost to an armored shoreline, it should not be allowed to happen incrementally and without public awareness and deliberation. Rather, such a fundamental resource issue for the State requires that conscious decisions be made (legislative, regulatory, judicial), including acknowledging the difficult choices inherent in that decision.

In this case, planned retreat could provide space with which to relocate endangered structures, but its high cost makes it infeasible at the current time. That said, if, in the future, the State or even local governments embrace planned retreat as a strategy, the removal of a hard armoring structure at the project location would be a very small part of that program inasmuch as many miles of hard armoring would need to be removed and other shore-fronting development retired to allow for the strategy to work comprehensively.

Alternatives Conclusion

ACOE has provided only limited information and analysis on non-armoring alternatives. Because of this, the Commission's ability to fully analyze alternatives is limited. Based on the information that is available, and absent a more comprehensive planned retreat policy (or some other form of similar legal measures designed to address such pre-Coastal Act development), a hard armoring project appears necessary in this case.

The project, therefore, meets the third test of Section 30235 of the Coastal Act.[28]

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[27] Estimated to cost $52 to $70 million.

[28] ACOE has evaluated several armoring options. Each of these provide differing levels of protection for blufftop public structures, but each will lead to similar armoring impacts as the seawall (to lesser and greater degrees), and each will eventually require more substantive armoring measures in the future, possibly the very near future, if the roadway structures are to be protected. These are discussed in the following sections related to armoring impacts.

4. Sand Supply Impacts

The fourth test of Section 30235 (previously cited) that must be met in order to require Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Shoreline Processes

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gullying, et cetera. Coastal dunes are almost entirely beach sand, and wind and wave action often provide an on-going mix and exchange of material between beaches and dunes. Many coastal bluffs contain marine terrace deposits that may consist, in part, of ancient beach deposits that formed when land and sea levels differed from current conditions. Since some marine terrace deposits consist of ancient beach material, a large proportion of the material in the terraces is often beach quality sand or cobble, and a valuable contribution to the littoral system when it is added to the beach. While beaches can be preserved as marine terrace deposits over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide material to the beach. Bluff retreat and erosion is a natural process resulting from many different factors such as erosion by wave action that may cause cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach. Since sand and larger grain material is the most important component of most beaches, only the sand portion of the bluff or dune material is quantified as beach material.

These natural shoreline processes affecting the formation and retention of sandy beaches can be significantly altered by the construction of shoreline armoring structures since bluff retreat is one of several ways that beach quality sand is added to the shoreline. Bluff retreat and erosion is a natural process resulting from many different factors; shoreline armoring directly impedes these natural processes.

The subject site is located within the Santa Cruz Littoral Cell. The Santa Cruz Cell is a high volume cell with annual longshore transport estimated between 300,000 and 500,000 cubic yards of beach quality materials annually.[29] The dominant direction of longshore transport in this sand supply system is north north-west to south south-east (roughly from up to downcoast in relation to the site).[30] Materials in this system have been estimated to come mainly from coastal streams (roughly 75%), with 20% coming from bluffs, and 5% coming from coastal ravines and sand dunes.[31]

[29] ACOE, San Francisco District, 1994. Note that ACOE's final EIS/EIR indicates that there have been differing estimates on the amount of littoral drift over the years, and concludes that annual littoral drift ranges from 250,000 to 325,000 cubic yards annually.

[30] Ibid.

[31] Griggs and Best, 1991.

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on local shoreline sand supply shoreline processes can be quantified,[32] however, including: (1) the loss of the beach area on which the structure is located (as described above); (2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline (also known as "passive erosion"); and (3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally.[33]

Fixing the back beach

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case here, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline fronted by a beach, the beach will be present as long as some sand is supplied to the shoreline and the beach is not submerged by sea level rise. As erosion proceeds, the beach also retreats. This process stops, however, when the retreating shoreline comes to a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, shoreline retreat in front of the armor stops. Eventually, the shoreline fronting the armor protrudes into the water, with the mean high tide line fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

In addition, sea level has been rising slightly for many years. In the Monterey Bay area, the trend for sea level rise for the past 25 years has been an increase resulting in a 100 year rate of nearly 1 foot per 100 years.[34] Also, there is a growing body of evidence that there has been a slight increase in global temperature and that an acceleration in the rate of sea level can be expected to accompany this increase in temperature. Mean water level affects shoreline erosion several ways and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. On a relatively flat beach (such as that found at the base of the bluffs here), with a slope of 40:1, every inch of sea level rise will result in a 40-inch landward movement of the ocean/beach interface.[35] This, too, leads to loss of the beach as a direct result of the armor.

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[32] The sand supply impact refers to the way in which the project impacts creation and maintenance of beach sand. Although this ultimately translates into beach access impacts, the discussion here is focused on the first part of the equation and the way in which the seawall would impact sand supply processes.

[33] Note that the proposed seawall project includes removal of existing concrete rubble and relocation of rip-rap. The Commission has been unable to establish a history, permit or otherwise, for these materials, and ACOE declined to provide any information when requested. Although the existing concrete rubble and rip-rap already result in some of the types of impacts described here, the evaluation that follows does not includes their impacts as baseline inasmuch as it is unclear that these materials have been recognized, and the most conservative tact in light of this uncertainty is to not include them as a baseline sand supply condition. In any case the strewn concrete rubble does not have nearly the magnitude of sand supply impact as a seawall.

[34] NOAA, National Ocean Service.

[35] In other words, a one-inch rise in sea level can result in over 3 landward feet of dry sandy beach loss.

These effects are also known as "passive erosion." ACOE has not quantified this impact. Rather, the Corps indicates that "no substantial passive erosion is likely to occur as a result of the project."

The Commission has established a methodology for calculating the long-term loss of public beach due to fixing the back beach, this impact being equal to the long-term erosion rate multiplied by the width of bluff which has been fixed by a resistant shoreline protective device.[36] Using this calculation, the impact would translate in this case to 1,100 square feet per year.[37] To convert the 1,100 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, coastal engineers use a conversion value representing units of cubic yards per square foot of beach.[38] In this case, the Commission has not been able to establish an actual conversion factor for the Pleasure Point vicinity. However, if a 1.0 conversion factor is used (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the cubic yard equivalent of 63 square feet per year can be calculated. Using the sand conversion factor of 1.0, the direct loss of beach due to fixing the back beach translates into a yearly impact of 1,100 cubic yards of sand.

Encroachment on the Beach

Shoreline protective devices such as the seawall proposed are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand and/or areas from which sand generating materials can be derived. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

In this case, the seawall's base would occupy roughly 7,700 square feet of beach space, and the rip-rap fronting the two stairways would occupy an additional 2,000 square feet.[39] Using the conversion discussed above, this translates into a one-time impact of 9,700 cubic yards of sand.

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[36] The area of beach lost due to long-term erosion (Aw) is equal to the long-term average annual erosion rate (R) times the number of years that the back-beach or bluff will be fixed (L) times the width of the bluff that will be protected (W). This can be expressed by the following equation: Aw = R x L x W.

[37] That is, 1 foot per year multiplied by 1,100 feet equals 1,100 square feet per year.

[38] This conversion value is based on the regional beach and nearshore profiles, and overall characteristics. When there is not regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the idea being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1 foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is less than 40 feet, it will take less than 1.5 cubic yards of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square foot of beach.

[39] Note that this is based upon the footprint of the seawall and the rock-rip that would front the two stairways. The seawall footprint area is based on a 7 foot width (5 foot of scour apron and 2 feet of wall thickness) that is assumed to cover an area seaward of the Purisma fingers that is covered at times with sand, and an 1,100 foot length. The two piles of rip-rap would occupy an estimated additional 2,000 square feet (i.e., an estimated 30 foot width based on an estimated 20 foot height at a 1.5:1 slope).

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the proposed armoring), some amount of beach material would be added to the Pleasure Point and larger littoral cell sand supply system from the bluffs. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact.[40]

ACOE estimates this impact to be 431 cubic yards of sand per year for the seawall between 32nd and 36th Avenues. However, they have used fairly low values for estimating the sand content of the bluff materials, namely 46% for the terrace deposits and 10% for the Purisima. ACOE indicates that other estimates for the project area are up to 60% for the terrace deposits.[41]

Using the Commission's methodology, using the upper limit of 60% sand content for the terrace material and 10% sand content for the Purisima, using a thickness ranging from 20' to 22' for the terrace materials and from 6' to 10' for the Purisima, and using the estimated 1-foot per year average annual bluff retreat rate, the bluffs would provide between 513 and 579 cubic yards per year (or an average of 546 cubic yards per year). This average estimate of 546 cubic yards per year can be considered the upper limit of impacts to sand supply from cutting off this portion of bluff material to the littoral supply. Given the range in composition of the terrace materials and in measured sand content, this can be considered an upper limit, and the Corps' estimate of 46% sand content and 431 cubic yards per year

[40] The equation is Vb = (S x W x L) x [(R x hs) + (1/2hu x (R + (Rcu - Rcs)))]/27. Where: Vb is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure); S is the fraction of beach quality material in the bluff material; W is the width of property to be armored; L is the design life of structure (50 years assumed per ACOE, though its lifetime can also be considered indefinite) or, if assumed a value of 1, an annual amount is calculated; R is the long term average annual erosion rate; hs is the height of the shoreline structure; hu is the height of the unprotected upper bluff; Rcu is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as R unless the Applicant provides site-specific geotechnical information supporting a different value); Rcs is the predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (this value will be assumed to be zero unless the Applicant provides site-specific geotechnical information supporting a different value); and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet).

[41] Foxx, Neilsen and Associates estimated that the sand component was 50%, but provided no basis for that estimate (Page 4 (Foxx, Neilsen and Associates, 1998) states, "According to Hicks (1985) and Best (1990), sand grains less than 0.18 mm in diameter move offshore and do not remain on the beach. We estimate that the terrace deposits contain about 50% sand greater than 0.18 mm in diameter."). For a project further downcoast, Benumof and Griggs proposed a similar 0.18 mm diameter cut-off for sand that remains on the beach. Since 0.25 mm to 0.125 mm is the range for fine sand and most of the sand on the Santa Cruz beaches is medium to coarse, the 0.18 mm diameter cut-off seems like a valid size range to consider. Also, for the site further down coast, Benumof and Griggs found that the sand content of the terrace material was 60%. That may be due to the site specific conditions at the Capitola location since that site was adjacent to a stream and the earlier site could have been subject to more over wash and sedimentation than the area of East Cliff from 33rd to 36th. The Corps has not provided its coring or sediment analysis so there is no way to verify or contradict their finding that the terrace material, as tested, is 46% on average. Since they note that the percentage of sand varies widely in grain size, that could explain the difference between their average and the results from Benumof's 1999 work.

can be considered the lower limit of impact.

Sand Supply Impacts Conclusion

The proposed project would be expected to result in quantifiable sand supply impacts totaling 11,346 cubic yards the first year and 1,646 cubic yards per year thereafter. If ACOE's identified 50 year project life time frame is used, this totals 92,000 cubic yards.[42] Although relatively small on a yearly basis in comparison to annual littoral drift, these impacts are not eliminated and constitute impacts for purposes of Section 30235. It is also important to acknowledge the potential cumulative impact of this loss given that bluff sediments in this area may provide approximately 20% of the total sand supply to the cell. The Applicant has not proposed any mitigation for these impacts. Without compensating mitigation, the project is thus inconsistent with the fourth test of Section 30235, and Section 30235 does not require Commission approval (or concurrence in this format) of the project. That said, since the Corps can agree to mitigation, this is not a fatal consistency flaw requiring an objection to the consistency determination.[43]

Note that mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system to mitigate the loss of sand that would be caused by a protective device. Obviously, such an introduction of sand, if properly planned, can feed into the Santa Cruz Littoral Cell sand system to mitigate the impact of the project. However, there are not currently any existing beach nourishment programs directed at this beach area, and no feasibility analysis of what such a program may entail, including potential benefits of it. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of such piecemeal mitigation efforts is questionable.

As an alternative mitigation mechanism, an in-lieu fee is oftentimes used by the Commission when in-kind mitigation of impacts is not available. In situations where ongoing sand replenishment programs are not yet in place, the in-lieu sand mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. Recent estimates to deliver beach quality sand to Santa Cruz beaches are roughly $25 a cubic yard. For the 11,346 cubic yards the first year and the 1,646 cubic yards per year thereafter, such a fee would translate to $283,650 the first year and $41,150 per year for the life of the project; if a 50 year design life is presumed (and disregarding inflation if it were to be applied as a lump sum now), this would total a fee of $2,300,000.

Part of the reason that a sand replenishment program is not in place in this area is that there has not been a comprehensive analysis of the parameters of such a program, nor the methods for implementing it.

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[42] Using the 50 year time frame presupposes that the seawall would be removed in 50 years. There is no proposed mechanism to require such removal in the future. So while 50 years is used for quantification purposes, the impact is likely longer than that.

[43] For example, if the inconsistency was that the existing development was set back such a distance that it was not in danger, this would constitute a fatal 30235 consistency flaw because there would be no way that the project could address this inconsistency.

This is in part because such impact mitigation discussion often arises in the context of individual private applications where the projects lack the degree of impact that would necessitate such analysis, and where applicants lack the wherewithal to evaluate, establish, and implement such a program regionally. In this case, though, the project sand supply impacts are large, it is a public project, and ACOE is an appropriate evaluation entity. Furthermore, the Corps must mitigate the identified sand supply impacts or the project cannot be found consistent with Section 30235 (and thus 30233(a) as to allowing fill).

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Section 30235 of the Coastal Act to protect (and mitigate impacts to) sand supply. Furthermore, in order for the Commission to find the proposed project consistent with Section 30235 and 30233(a) of the Coastal Act as cited in this finding, the Commission is conditioning its concurrence for the Corps to study the feasibility of implementing a regional sand supply program in the Santa Cruz Littoral Cell to promote beach formation in the Live Oak beach area. At a minimum, such study shall identify mechanisms (including structural, programmatic, and funding requirements) to increase the amount of sand in the shoreline sand supply system through sand import, and shall evaluate corrective measures to improve the transport of sand around the Santa Cruz Harbor jetties, and potential modifications to the jetties themselves; recommended implementation actions shall be provided (see condition 9).

5. Long Term Structural Stability and Assumption of Risk

Pursuant to Coastal Act Section 30253 (previously sited), development is to be designed, sited, and built to allow for natural shoreline processes to occur without creating a need for additional more substantive armoring. Coastal development permittees for new shorefront development thus are essentially making a commitment to the public (through the approved action of the Commission, and its local government counterparts) that, in return for building their project, the public will not lose public beach access, sand supply, ESHA, visual resources, and natural landforms, and that the public will not be held responsible for any future stability problems. Coastal Act Section 30253 requires that the proposed project assure structural stability without the need for additional armoring. The project has been designed by engineers with experience in coastal armoring projects to provide protection for 50 years or more, and ACOE indicates that thorough monitoring and maintenance activities will ensure that the seawall is maintained in its design state. The project is consistent with Section 30253.

6. Geologic Conditions and Hazards Conclusion

There exist existing endangered structures for which hard armoring is required. However, the project's sand supply impacts have not been mitigated. Thus, the project is not consistent with Section 30235. This inconsistency is not irreparable, though. In other words, if the Commission were to identify an appropriate sand supply mitigation, and ACOE were to incorporate it into their project, the project could be found consistent with Section 30235. A condition is applied in this regard as indicated above (see condition 9). It is consistent with Section 30253. Because a hard armoring structure is required, it can be found consistent with Section 30233(a) as regards filling of coastal waters.

The Commission concludes that if modified in accordance with the Commission's conditional concurrence, the proposed seawall project would be consistent with the Coastal Act Sections 30233(a),

30235, and 30253 as discussed in this finding.

B.Public Access and Recreation

1. Applicable Policies

Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

> ***30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211.*** *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> ***30213.*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*
>
> ***30221.*** *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*
>
> ***30223.*** *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Coastal Act Section 30240(b) also protects parks and recreation areas, such as the East Cliff Drive recreational area as well as the Pleasure Point beach and surf areas that front it. Section 30240(b) states:

> ***30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

2. Analysis of Consistency with Applicable Policies

These overlapping Coastal Act policies clearly protect the existing East Cliff Drive recreational area, the beach, and the offshore surfing area for public access and recreation purposes, particularly free and low cost access such as that provided in abundance here.

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A. Surfing

1. Surfing Background

Pleasure Point is an internationally known, world-class surfing area. Located on the east side of Santa

Cruz, "The Point" includes at least a half-dozen distinct surf breaks, each with its own unique characteristics, that provide a variety of opportunities for both novice and advanced surfers. The high quality of surfing waves, and the consistently favorable surfing conditions found at Pleasure Point, make it a unique and particularly valuable recreational resource that is protected by the Coastal Act Sections cited above.

While surfing at Pleasure Point is popular year-round, the largest and most consistent waves occur during the fall and winter seasons. During these times, winter storms under the Aleutian Islands migrate across the Pacific Ocean into the Alaskan Gulf, creating gale force winds that generate very large ocean-going swells. As these swells travel down the west coast, the raw wave energy is groomed into sets of waves of equal height and traveling at similar speeds. In general, a distance of 1,000 nautical miles is required to groom raw storm energy into good quality surfing waves. The typical pattern of the fall and winter storms puts the Central Coast of California at an optimal distance to receive the energy of these storms in the form of well-organized surfing waves.

Equally important to the high quality surfing conditions at Pleasure Point is the configuration of the shoreline and the underwater topography. A series of points, reefs, and sandbars serve to guide and shape the waves, and cause them to break at predictable peaks that accommodate a wide range of surfing levels. The largest and fastest breaking waves peak at the up-coast portion of the Point, over rocky reef ledges, and are preferred by advanced surfers. The larger waves of the outer break transition to smaller, rolling waves further down-coast, which break over a combination of rocky shelves and sand bars, and are more suitable for beginners. On good days, a surfer can link a single ride across these various peaks for a distance of up to 200 yards.

The southwest facing direction of Pleasure Point, and its location within the northeastern portion of Monterey Bay, also contributes to the high quality surf by providing protection from predominant northwest winds and stormy ocean conditions. During the fall and winter surf season (October – March), average wave heights at Pleasure Point are 5' – 8' with larger swells 8' – 12' in height, common. By contrast, wave heights at the more exposed west facing beaches can be twice that of Pleasure Point, with much rougher conditions that attract only the most experienced surfers. The cleaner, more manageable conditions at Pleasure Point that result from its protected location and the refraction of waves as they travel further into Monterey Bay, make it one of the most popular and consistent surfing breaks in California. When conditions are ideal it is not uncommon to see upwards of 150 or more surfers in the water along Pleasure Point.

Attesting to the significance of surfing at Pleasure Point is the existence of three surf schools, and a large number of industries, shops, and visitor-serving establishments oriented to surfing located within a few miles. Several surf competitions are held each year at Pleasure Point, and many Santa Cruz surfers, who got their first experiences at the Point, have gone on to become internationally recognized professional surfers. It is a destination for water sports enthusiasts from around the world, as well as a gathering place where local and visiting surfers congregate to check the surf and share surf stories. Pleasure Point is at the hub of the Santa Cruz surfing community, and a unique and valuable recreational asset to the State of California.

2. Impact Analysis

Several relationships have been developed to establish wave characteristics. One relationship (called the Irribarren number, the surf scaling parameter, or surf similarity parameter by different researchers) relates wave characteristics to beach slope and wave steepness. A second relationship compares the wave vortex geometry to the orthogonal seabed gradient.[44] Both these relationships correlate the shape and energy of the waves to the sea bottom, reflecting the importance of bathymetry on wave conditions. A steep seabed gradient will produce a steep-faced wave. The alignment of the wave relative to the seabed will determine the peel angle. Face steepness and peel angle are key components to the quality of surfing waves.

There are several ways that the proposed shoreline armoring could adversely impact surfing conditions at Pleasure Point.

a. Changes in Bathymetry

Bathymetry is the measurement of water depth at various places in a body of water. As previously described, the underwater reef/rocky ledge at Pleasure Point is one of the most important physical features that result in high quality surfing waves. Sand deposition is also a factor. ACOE's final EIS/EIR used field observations and aerial photographs to identify current surf locations. In general, the reef breaks at Pleasure Point are 400 to 600 feet offshore. Conditions vary somewhat, but since the reef is the primary physical feature controlling the location of the break, the break does not move much beyond the zone of influence of the reef feature, except when sand bars form. The influence of sand bars on the waves at Pleasure Point is most notable at the down-coast peaks, such as in the surfing area between 36th and 38th Avenues.

The affect of bathymetry on the shape of breaking waves at Pleasure Point can currently be observed at different tides. At higher tides, waves break closer to the bluff, with less steep faces. During tides greater than 6 feet, a decrease in the quality and frequency of surfing waves can be noticed at various locations within the Pleasure Point surfing area, particularly when swell size is under 6 feet.

Over the long term, the proposed seawall will influence the bathymetry at Pleasure Point by "fixing" the back beach. That is, the seawall will prevent the natural process of erosion from occurring, and thereby establish a permanent location to the coastal bluff. Under natural conditions, the bluff would be eroded by waves and would move landward over time. Using the estimated long-term erosion rate, the bluff would be expected to retreat landward approximately 50 feet over the next 50 years. This would move landward the point where incoming wave energy interacts with the bluff. Thus, under natural shoreline retreat conditions, the position of wave/bluff interactions would move inland over time.

When the bluff location is fixed, the beach and foreshore will experience more frequent inundation either as sea level rises or as the beach profile erodes and deflates. The tide records for Monterey Harbor

[44] The full relationship developed by Mead and Black ("Predicting the Breaking Intensity of Surfing Waves") is: $Y = 0.065X + 0.821$, where Y is the wave vortex ratio and X is the orthogonal seabed gradient. This quasi-empirical relationship was developed through the study of 48 images from 23 different world-class surfing breaks. No Santa Cruz surf breaks were included in this analysis.

show a historic rise in mean sea level of almost 1 foot per 100 years (based on a 25 year record) but a drop in both the diurnal and mean tide ranges of 0.632 and 0.499 respectively. If this trend either continues or accelerates, water depths will deepen over time.

When combined with an armored shoreline, this increase in water depth can have an adverse long-term impact on surfing conditions. With or without the proposed seawall, water over the reef will be deeper more of the time. However, without a seawall, other wave-tripping features inland of the current break, such as rocky ledges of higher elevation or sandbars, will continue to result in breaking waves over the shallow waters that form as the bluff naturally erodes. In comparison, the installation of a seawall will prevent the surf break from adapting to increased sea level, because in the absence of the landward migration of the bluff, areas of shallow water will continuously decrease. Under this situation, breaking waves would occur closer and closer to shore, and eventually, over the long-term, become unsurfable.

It is difficult, if not impossible, to predict the time frame under which these impacts will occur. In comparison to normal fluctuation in tidal elevations that change water depths by a range of 2 to 8 feet on a daily basis, the current rate of sea level rise (1 foot per 100 years) may not appear significant. However, given the diminishing wave quality currently observed during extreme high tides, it is possible that even minor changes in sea level will begin to influence the quality surf during high tides exceeding 4 feet in the near term (e.g., within 10 to 20 years), and that more significant impacts will occur over a longer time frame. Any increase in the current rate of sea level rise will cause these impacts to occur more rapidly.

b. Wave Reflection

It can also be anticipated that the proposed seawall will, over the long term, change the interaction between waves and the bluffs, either by changing the reflection location of the wave, or by changing the amount of energy that is reflected. Reflection of wave energy can change the offshore wave patterns and diminish the quality of surfing waves. Often referred to as “backwash,” reflected wave energy causes waves to break in unpredictable ways, and disrupts the clean line and peel of waves that make Pleasure Point a particularly high quality surf break.

In the short term, the concrete seawall should reflect and dissipate waves in a similar fashion to the existing sandstone bluffs; waves will respond similarly when striking either a concrete face or a sandstone face. Over time, however, the seawall will have an influence on wave reflection, because, as discussed above, it will prevent erosion of the bluff face. Halting the process of erosion will prevent the bluff from retreating away from areas of high wave energy. Since the amount of reflected wave energy is proportional to the amount of wave energy that hits the bluff, more wave energy will be reflected off a bluff that is fixed in a particular location than a bluff that is allowed to erode away from areas of high wave energy. The reflection of wave energy off the seawall would reduce the overall length of a ride and reduce the zone where it is safe and enjoyable to surf.

In addition, the protective device may, over time, alter the alignment of the shoreline, by causing accelerated erosion at the up-coast and down-coast endpoints of the seawall. These changes in shoreline configuration could also affect the orientation and direction of reflected wave energy, resulting in the

adverse impacts to surfing discussed above.

c. Hazards

The fixing of the back beach, and the resulting long-term reduction in beach area, will also pose hazards to surfers and beach goers. In particular, the increase in water depth and wave reflection discussed above will make it more difficult to enter and exit the beach and surfing areas, particularly during higher tides. It is challenging to safely exit the water during high tides and large swells at the present time. While the project will improve this situation in the short term by adjusting the location of the existing stairways and removing rubble, the problem will be exacerbated over the long term as a result of increased wave energy in the nearshore environment.

D. Surfing Conclusion

In the short term, surfing impacts are unlikely to be significant. The seawall may result in the loss of some sand that provides unknown sand bar formation and reef-filling (and that causes waves to break), but this impact is difficult to model and its effect equally difficult to isolate and quantify.

However, ACOE's conclusion that the proposed seawall will have a minimal effect on surfing over the long-term is not supported by substantial evidence. There is little technical support for this conclusion, and, unfortunately, no mathematical, physical or other model that could be used to correct it. It can be expected that fixing the existing bluff in its current location, rather than allowing it to naturally erode, will have an adverse long-term impact on surfing, for the specific reasons detailed in this finding.

As with all armoring that "fixes" the bluff location on an eroding shoreline, and where sea level continues to rise, it is expected that this seawall will eventually result in the loss of the beach and a reduction in quality or elimination of the offshore surfing area. It is unknown as to how long this process will take (and ACOE did not evaluate such long-term impact). Sea level rose approximately one foot over the past one hundred years in the Monterey Bay area. At that rate, or at a higher rate (that could result from global warming), the beach area will disappear relatively quickly, as it is not large to begin with, but the length of time until the surf break is noticeably impacted is less clear. As seen with daily tidal fluctuations, a foot or two difference in sea level can have a tremendous impact in surfing wave quality. By installing the seawall, the space available for the beach to move landward, and for substitute wave "tripping" areas to be established, is reduced. At some point in the future, the water level is expected to be at such a depth that waves do not break until very close to shore, significantly diminishing, and potentially eliminating, the high quality surfing opportunities currently available. ACOE did not evaluate this long-term impact, and it is difficult to predict with certainty when this would occur.

While the extent and time frame of these impacts cannot be predicted, the importance of the Pleasure Point surf break as a water oriented recreation area of international significance necessitates that every effort be made to prevent and mitigate any adverse impacts that may occur.

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Section 30210, 30211, 30213, 30220, and 30240(b) of the Coastal Act to protect (and mitigate

impacts to) surfing. Furthermore, in order for the Commission to find the proposed project consistent with these sections of the Coastal Act as cited in this finding, the Commission is conditioning its concurrence for the Corps to monitor the effect of the seawall on surfing. Should the monitoring indicate that surfing quality has decreased, reasonable remediation and/or compensatory mitigation measures shall be identified (see condition 8). The monitoring also has additional utility inasmuch as it will also support future analyses of the impacts of proposed shoreline stabilization projects in the Pleasure Point area.

B. Beach Access

As described in the preceding finding, the seawall and related rip-rap would occupy roughly 9,700 square feet of beach area. Of this, approximately 4,200 square feet (the rip-rap area and the 2 foot thick wall area itself) would not be available for recreational access at any time, long or short term. The remainder, 5,500 square feet, is the area where the 5 foot scour apron would be constructed.

1. Scour Apron

The five-foot scour apron would be expected to be covered with beach sand during summer elevations, and scoured during the winter. Because this beach area is primarily a through access area (at least during lower tides, and at other tides after the rubble and rip-rap are removed) as opposed to a "sitting" beach, the impact of the scour apron on through lateral access would be expected to be minimal because it would be constructed flush with the bedrock platform. The apron would introduce a decidedly unnatural concrete finish into the natural walkway area – an area that otherwise would be naturally undulating Purisima Formation outcrops. This impact would degrade the beach recreational experience, contrary to the access policies cited above, and would degrade visual resources when exposed (see also visual resource findings that follow). There are two ways of addressing this issue to achieve Coastal Act consistency.

The first is to remove the scour apron from the project. The apron has been designed so the reflected wave energy will scour the concrete base and not the more erodible Purisima Formation. The apron in not necessary in this regard, but there will likely be more scour-based destruction of the Purisima (at the base of the seawall) if the apron is not provided at the base. Absent the apron, the seawall footing itself might need to be extended deeper into the Purisima to account for the added scour at its base (i.e., without the apron, there may be up to a foot or more of additional scour into the Purisima, requiring another foot or more of footing depth). The scour at this location is an estimate inasmuch as the rubble has been keeping this Purisima covered for a long time. It may be chopped up and ready to scour with the first few storms, or it may be strong and competent and able to withstand wave forces for a few years before exhibiting a scour trench. If the beach recovers regularly, the scour trench would fill in with sand, but there would remain a depression in the Purisima once the sand moved offshore. The depression/scour hole would deepen in successive years and with successive wave action and abrasion.

The second option is to allow the scour apron, but require it to be sculpted, textured, and colored to mimic the Purisima platform into which it would be embedded (flush at the top).

In this case, it seems prudent to retain the scour apron and require its surface treatment to be modified to mimic the remainder of the wall. This conclusion makes particular sense in light of the use of the beach here for lateral as opposed to beach going access. See condition 2.

2. Rip-Rap

ACOE proposes to include approximately 1,200 cubic yards of rip-rap fronting the two stairways in the seawall, and fronting the seawall's downcoast end (nearest the private O'Neill residence). The rip-rap will occupy approximately 2,000 square feet of beach and lateral recreational space, blocking through access at higher tides, particularly to and from the stairway itself, and degrade the beach recreational experience contrary to the access policies cited above, and degrade visual resources when exposed (see also visual resource findings that follow).

Ostensibly, the rip-rap fronting the stairways is proposed to protect against scour. However, the stairways are integral to the seawall and also include the aforementioned scour apron for this purpose. It is unclear as to why the rip-rap is necessary. If additional strength were required, the stairways could be embedded deeper and/or could incorporate subsurface caissons for this purpose without the need for rip-rap. In any case, to achieve Coastal Act consistency, the rip-rap fronting the stairways must be removed from the project (see condition 1).

Similarly, at the downcoast end, the configuration of the seawall in relation to the existing rip-rap fronting the subject residence is such that end effects are not anticipated. ACOE proposes to pull the armoring back, install the seawall, and then reinstall the rip-rap. This rip-rap, like the rip-rap above, presents the same coastal resource inconsistencies. There is no reason that if the seawall is constructed to the downcoast property line (as proposed by the Corps), that a small end wall cannot be incorporated into the rip-rap and then the end wall feathered with rip-rap where the rip-rap is all kept on the downcoast property on which the residence sits, and not located seaward of the seawall on public tideland property. In this way, the rip-rap is confined on the property where it was permitted (i.e., the O'Neill property), excess rip-rap leading to access and scenic impacts is removed, and the seawall end is adequately protected against flanking. In any case, to achieve Coastal Act consistency, the rip-rap seaward of the seawall at its end must be removed from the project (see condition 1).

3. Long-Term Loss of Beach

As previously indicated, the beach fronting the seawall is expected to disappear over time due to lack of sand supply, fixing the back beach, and rising sea levels. ACOE indicates that "the distance between the bluff and the mean low low water line (MLLW) would decrease between ten and twenty feet during the fifty-year project period." The previously described sand supply mitigation, the proposed removal of the rubble,[45] and the required removal of the rip-rap can offset this impact, but that does not respond to the fact that this beach will be unavailable for public access at some point in the future. This is inconsistent with the Coastal Act access and recreational policies.

[45] On this point, and as previously referenced, it is not clear that such rip-rap and rubble enjoys any permit status.

One option considered to address the loss of lateral beach area was to include some type of platform into the base of seawall at a height above typical tides that would provide base of bluff lateral pedestrian access. However, although this could provide a new type of lateral access, it may appear unnatural, particularly if there had to be railings for safety purposes, and it would come at the expense of additional beach/intertidal coverage to provide adequate platform width. Ultimately, this design option was dismissed because blufftop recreational trail access is available at this location instead.

Ultimately, if the County parkway project on the blufftop goes forward, this loss of beach area would be traded off for the recreational areas created atop the bluffs at its expense. Provided this occurs, and public recreational access is maximized in the Parkway project as directed by the Act, this impact can be mitigated by the access improvements of the Parkway project (see Parkway finding below).

4. Beach Access Conclusion

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Sections 30210, 30211, 30212, 30213, 30220, 30221, 30222.5, 30223 and 30240(b) of the Coastal Act to protect (and mitigate impacts to) beach access. Furthermore, in order for the Commission to find the proposed project consistent with these sections of the Coastal Act as cited in this finding, the Commission is conditioning its concurrence for the Corps to modify the scour apron and eliminate rip-rap seaward of the wall as discussed above (see conditions 1 and 2). Offsetting benefits can also be provided by maximizing public recreational access improvements in the East Cliff Drive Parkway project (as detailed in the Parkway finding below).

C. Access Impacts During Construction

The project would involve the use of large equipment that would occupy East Cliff Drive and the beach and water area fronting the bluffs between 32nd and 36th Avenues, and generally intrude and negatively impact the aesthetics, ambiance, serenity, and safety of the recreational experience during the expected half year of construction. Any future maintenance episodes would lead to similar construction impacts, but to less expected degrees. Although construction impact can be minimized by appropriate construction controls as proposed by ACOE, they cannot be eliminated. As indicated, the Pleasure Point area is an extremely popular beach, bluff, and surfing recreational area and project construction will not only remove beach area from being potentially used, but it will negatively impact the beach recreational experience by introducing construction (including large equipment, noise, etc), into the recreational use area. ACOE will restore all disturbed recreational areas following construction, but cleaning up one's construction mess does not compensate for the negative public access impacts over the duration of construction. In recent cases, the Commission has required compensatory mitigation for this impact.[46]

Construction impacts will add to the same types of beach and surfing impacts identified above, and will also lead to loss of blufftop access during construction inconsistent with the provisions of Sections 30210, 30211, 30212, 30213, 30220, 30221, 30222.5, 30223 and 30240(b) of the Coastal Act to protect

[46] For example, in the Podesto seawall case (3-02-107, approved August 6, 2003), a 250 foot long seawall about half the height of this one Manresa State Beach, the permittee was required to fund $20,000 worth of public access repairs to offset construction impacts. In that case, the construction time frame was half that expected here.

(and mitigate impacts to) recreational blufftop access. Provided the parkway project occurs, and public recreational access is maximized in the Parkway project as directed by the Act, this impact can be mitigated by the access improvements of the Parkway project (see Parkway finding below).

D. East Cliff Drive Recreational Access

The East Cliff Drive Parkway project, although not a part of this consistency determination, is critical to understanding the case for allowing the seawall with its attendant impacts. As opposed to typical armoring applications in front of the Commission, where the impacts from the armoring are all borne by the public with all benefits to private landowners, the benefits and burdens in this case are both to the public. The Corps has evaluated the Parkway benefits as offsetting impacts that are due to the seawall. Although not part of the consistency determination, the Commission agrees that it is appropriate to do so in this case. The East Cliff Drive Cliff corridor is heavily used by the public for physical and visual coastal access, but it clearly is in need of improvements to enhance the public coastal recreational experience. This portion of East Cliff Drive is currently dangerous for pedestrians and bicyclists, offers little in the way of formal amenities, and is aesthetically cluttered. Notwithstanding these shortcomings, the East Cliff Drive corridor remains an important coastal resource primarily because of significant amount of public use, and the significant coastal vista and neighborhood ambiance afforded the public here.

That said, the seawall and the parkway projects are not connected in a regulatory sense, although the County is the local project sponsor for the seawall (and sharing the costs) and is also the applicant (and cost-sharer) for the parkway improvements as well. In this case, it is reasonable to presume that the parkway project will occur if the seawall is constructed. Because the parkway improvements are conceptual at the current juncture, it is not clear to what degree they can offset adverse impacts from the seawall. It will not be until they have completely been reviewed through a normal regulatory process, including a CDP process, that their ultimate configuration will be established. The Commission has previously been involved with such County streetscape improvement projects in Pleasure Point,[47] and Commission staff have provided detailed feedback on the parkway project (see exhibits I and J). Provided the parkway project occurs, and public recreational access and coastal resource improvements are maximized in the parkway project as directed by the LCP and the Coastal Act, the offsetting mitigation from the parkway project is reasonable to use to mitigate for some of the impacts from the seawall (as described above).

E. Access and Recreation Conclusion

The project presents a difficult decision, for which there are clearly access trade-offs. If the seawall is constructed, then the East Cliff Drive recreational area will be protected, but beach and surfing access will be incrementally diminished over some amount of time. If the seawall is not constructed, the East Cliff Drive parkway area will be incrementally lost in the near-term, but beach and surfing access will be unaffected by a seawall here during that time. At some point, the existing regulatory framework is such that armoring would be allowed to protect either what remains of East Cliff Drive and/or the inland

[47] See, for example, Coastal Commission CDP A-3-SCO-00-076 (Pleasure Point Road Improvements).

residences, as required by the Coastal Act. At that point, the same beach and surfing impacts would occur (and continue from that point on into the long-term). Whether the wall would be constructed now or a decade or so from now, would appear to have very little difference on the surf. This is because the limited additional horizontal space that would be created by allowing erosion of East Cliff Drive over that short time has much less impact on the surf break than does the vertical component of sea-level rise.

Provided that surfing conditions are monitored over the life of the project, rip-rap is removed from the project, the scour apron is modified to match the Purisima Formation bench, and the East Cliff Drive Parkway project occurs and maximizes public recreational access and coastal resource enhancements, project impacts can be reduced and mitigated to the degree feasible. The Commission concludes that if modified in accordance with the Commission's conditional concurrence, the proposed seawall project would be consistent with the Coastal Act's access and recreation policies cited in this finding.

C.Visual Resources, Landform Alteration, & Community Character

1. Applicable Policies

Coastal Act Section 30251 states:

> ***Section 30251.*** *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of recreation areas such as those involved in this application. Section 30240(b) states:

> ***Section 30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Finally, Coastal Act Section 30253(5) protects community character. Section 30253(5) states:

> *New development shall where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.*

2. Analysis of Consistency with Applicable Policies

As previously described, the Pleasure Point project area is in a special coastal community that is a popular visitor destination point, and it is also in a significant public viewshed. The Coastal Act clearly protects these resources.

A. Background

The existing public viewshed and landform at the project site is currently degraded and aesthetically cluttered. This is due to the piles of rip-rap and rubble on the beach, the existing cribwalls in the upper bluff in two locations, the abandoned concrete restroom along the bluffs, the exposed and cantilevered drain pipes, the temporary safety barriers at the blufftop edge, and the configuration of East Cliff Drive atop the bluff where portions of it have eroded away, plastic bollards define recreational areas, bare soils and erosion rills the edge of the bluff, and traffic barriers extending along the bluff (and indeed hanging over it in some locations).

In spite of this, the blufftop area provides spectacular views of the ocean and, despite the many unnatural features, the majority of the bluff area remains in its natural form and contributes to the character of the area.

B. Impacts

The ACOE project will remove the abandoned restroom, cover the existing bluff (and the cribwalls) with concrete, and remove the rubble and rip-rap strewn across the beach (see also preceding finding). Although this will help improve the viewshed in part (e.g., removal of rip-rap and rubble), and although the project would be made to mimic natural bluffs, it would still introduce a concrete and artificial structure into the significant public recreational viewshed, replacing the natural landform with an artificial one. Public views from the beach, from offshore, and from East Cliff Drive would be negatively affected as discussed below.

Rip-Rap

The rip-rap proposed to front the seawall is not necessary for stability, and it adversely affect access (see previous findings). The presence of these piles of large rock will also detract from the viewshed. This viewshed impact can be reduced by requiring removal of rip-rap fronting the seawall, as previously described (i.e., as also discussed in the preceding access finding – see condition 1.)

Surface Treatment

ACOE will sculpt, color, and texture the concrete facing to approximate natural bluffs (see photo-simulations of the seawall in exhibit C, and example of completed “soil nail” walls in exhibit E). If done correctly, such sculpting can help to camouflage large slabs of concrete; when done poorly, however, it just reinforces the unnatural element present in the back beach area. In order to ensure that this is done correctly to offset viewshed impacts, ACOE will need to coordinate with the Executive Director

regarding the surface treatment before it is applied (see condition 5). Such surface treatment should attempt to mimic naturally occurring bluff undulations, protrusions, color, and texture. In addition, to ensure viewshed compatibility, the scour apron shall be similarly faced (as also discussed in the preceding access finding – see condition 2.)

Stairways

As seen from ACOE's visual simulations, the project would include very straight-line edges for the protruding stairway structures incorporated into the seawall, and would include very linear and visually prominent railings for them.

The stairways are meant to be integral to the seawall, and to mimic the natural bluff. However, as seen from the visual simulations, these projections include very linear edges that diminish from the intended bluff-like illusion (see exhibit C). This impact can be reduced by ensuring that the edges of these protruding stairways (as seen from offshore and the beach) appear more natural (i.e., non-linear and random), and are meant to approximate natural bluff forms (see condition 4).

For the stairway railings, the prominence of the railings is antithetical to the intent of camouflaging the seawall structure within the seawall that itself is meant to mimic a bluff inasmuch as natural bluffs do not typically include such linear components. To do so will detract from what illusion will be provided (see elevations of stairways in exhibit B, and photo simulations in exhibit C). These railings need to be hidden to reduce this impact. This can readily be accomplished by hiding the railings behind seawall facing that rises above the stairs themselves. In other words, instead of a railing extending 3 feet above the stairs that is visible from the beach and offshore, the stairs themselves shall be recessed below a three foot structural element on the seaward side of the stairs into which railings can be attached (see condition 4).[48] The upper edge of this structural element (as seen from the beach and offshore) must not be straight-line linear, but rather must better approximate natural bluff forms (as also described above – see condition 4).

Blufftop Railing

As seen from ACOE's visual simulations, the project would include a very straight-line railing atop the bluff. ACOE indicates that these will be wood where possible, and that low-growing vegetation or setbacks should be used in place of railings where possible (i.e., where it wouldn't compromise safety). The Commission agrees that these types of measures are appropriate. However, such measures do not compensate for the straight-line unnatural look of the blufftop rail itself (see visual simulation, exhibit C). The prominence of the railings as seen from East Cliff Drive and from the beach/surfing area is

[48] Note that ACOE indicates that this inset stairway design "was not selected because of the possibility of driftwood, kelp, and other beach debris becoming trapped behind such a solid feature and making the stairs inaccessible without frequent maintenance." However, there is no data to support such a conclusion. Whether it is a metal railing or an inset stairway would have little difference on debris accumulation. Water would flow through regardless, and while small items (less than 3½ inches) would fit through the metal railings (and would not move through solid concrete), such smaller objects would wash down the stairs regardless. In addition, with vertical railings rising above the concrete, some additional debris may accumulate due to its ends being caught between the railing's vertical members and getting wedged. In any case, ACOE indicates that to change to the inset stairs "is a relatively minor design option that would not appreciably change the proposed project."

antithetical to the intent of camouflaging the seawall structure to mimic a bluff inasmuch as natural bluffs do not typically include such linear components. The Commission believes that this railing viewshed impact can be reduced by dropping the height of the seawall by about 3 feet (below the paved recreational trail height) to allow for a bi-level pathway system with the paved recreational trail at the higher elevation, and the decomposed granite pedestrian trail at the lower elevation (nearest the bluff edge) separated by vegetation (see exhibit K for cross-section example, and see condition 3).

This bi-level path modification accomplishes several coastal resource objectives. First, the railing's prominence in the beach and offshore viewshed is reduced because it will be seen against the backdrop of the grade separation and vegetation that would be located between the two components of the recreational trails. Second, the view of the ocean from the paved recreational trail as well as from East Cliff Drive itself will be enhanced because the railing will be lowered out of it, thus reducing view blockage and clutter. Third, the overall extent of seawall will be reduced by 3 feet along the top of the seawall – eliminating 3,300 square feet artificial concrete "bluff" from the overall viewshed beach and offshore viewshed, and reducing its impact. Fourth, the grade separated pathway would provide better user separation to help avoid conflicts between faster moving wheeled users (in the paved portion above) and slower moving pedestrians (in the lower portion below). Finally, the grade separation would provide a more interesting character and aesthetic (than would a relatively flat Parkway area) that would be more in keeping with the Pleasure Point's community character.

Note that ACOE has indicated that this project permutation would result in drainage problems because the lower level path would require separate drainage, and would create pockets where water would collect requiring "more elaborate and costly engineering of the wall." However, there is no reason that drainage of the lower level path could not be connected into the project area drainage system. In addition, the lower level path would not create any "water pockets" that would not be created if it were not grade separated. In any case, this alternative was evaluated by the Commission's coastal engineer who did not find any compelling engineering reasons to not do it.

Storm Drain Outlet Pipes

The bluff viewshed is currently degraded by the presence of six storm drain outlets extending out of the bluffs at varying angles and with varying degrees of cantilever. ACOE indicates that 5 of these would remain (actually capped and replaced in the project area), and that rip-rap (or equivalent) energy dissipation would be included. These drain pipes significantly detract from the scenic view here. Rip-rap as energy dissipation likewise detracts from the view (see elevations proposed in exhibit B).[49] These impacts can be reduced as follows:

First, all drainage needs to be consolidated to the fewest number of drainage outlets feasible. This ensures that any visible drain pipes are limited as much as possible. It also allows for the consolidated

[49] Note that the photo-simulations do not include these drain pipe outlets and rip-rap energy dissipation areas in them – see exhibit C – and are somewhat misleading in this regard

drainage to be filtered and treated to protect offshore water quality (see also findings that follow). Based on the length of the project area, it appears reasonable that all project area drainage could be directed to a single discharge point in the project area. Drainage from the Avenues and East Cliff Drive can be collected on the inland side of the road and directed to a single appropriate point.

Second, the reduced number of drain pipes must be camouflaged. This can best be accomplished by prohibiting cantilevered pipes, directing the outlet pipes to the terrace deposit/Purisima contact point, and by partially encasing the pipe outlet in sculpted concrete so that it is not visible from above or below. By allowing the drainage to exit at the "bench" contact, energy dissipation is not necessary and thus rip-rap (and its attendant impact on the viewshed) can be eliminated. Where some amount of energy dissipation is necessary due to flow volume, such energy dissipation devices shall themselves be hidden behind and/or in the sculpted concrete in the same manner as the outlet pipe itself.

See condition 6.

Seawall Drain "Weep" Holes

The seawall would include a series of "weep" holes where water collected in the area behind the seawall would drain. These drain outlets would be every six feet in a straight line along the length of the seawall (see project plans). As with the railing, natural bluffs are typically anything but linear, and a series of seep holes in an equidistant straight line will appear very unnatural. Even in successfully camouflaged walls, the weep holes detract from the illusion and lessen the value of the camouflage mitigation.[50] In addition, over time, as drainage from the weep holes begins to stain the concrete at the outlet in a similar equidistant pattern, this unnatural appearance will only be heightened. This impact can be reduced by requiring unequal spacing of the weep holes, as well as partially encasing the weep hole outlets in sculpted concrete so that it is not visible from above or below (the same as with the storm drain pipe outlets). See condition 6.

Community Character

There has been some concerns raised that the seawall and parkway projects will introduce a more "finished" facade into the Pleasure Point area that will detract from Pleasure Point's informal and eclectic charm. This is not the first time that this concern has been raised regarding major street improvement projects in the Live Oak Beach area and Pleasure Point.[51] In general, the trend in Live Oak has been towards fairly standard and linear engineered streetscape designs, with which the Commission, too, has raised concerns.[52]

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[50] For example, the seacave plug at Cowell Beach in the City of Santa Cruz upcoast authorized by the Commission in 2002. Although the camouflaging of the surface texture to approximate a natural bluff was successful, the weep holes and linear footing detract from the ability of the camouflage to hide the unnatural concrete fill.

[51] For example, the County's road improvement project that was approved by the Commission on appeal in 2001 (A-3-SCO-00-076)

[52] Note that in A-3-SCO-00-076, the Commission identified the following as more appropriate streetscape designs to be pursued in the Live Oak beach area and Pleasure Point: "informal sidewalks made of pervious materials (e.g., decomposed granite) meandering informally and curvilinearly through wider landscaped strips on one or both sides of street (separated by landscaping) to accomplish a more informal ambiance; a meandering curvilinear roadway prism (i.e., within the right-of-way) that serves to again soften the

The project in this case would result in a more formal appearance to the East Cliff Drive corridor – both because of the Corps seawall and the County's parkway improvements. In terms of the seawall and integrated stairways, the visual modifications required here will help to offset this impact. Furthermore, ACOE plans to install native landscaping from the Commission's bluff plant list applicable to Santa Cruz County that is intended to cascade over the top of the seawall, screening it from view, and providing a more natural edge to the top of the wall as seen from above and below. Planting pockets within the seawall itself, although originally part of the conceptual project, have been eliminated due to concerns that they would not be accessible and difficult to maintain. This seems to be a reasonable conclusion, and it is not clear that such planting pockets would be made to work properly. That said, the visual modifications above will help to soften the formalized bluff.

In terms of the parkway improvements, they are conceptual at the current juncture. It will not be until they have completely been reviewed through a normal regulatory process, including a CDP process, that their ultimate configuration will be established. It is in that review context that their contribution to the character of the community will be evaluated, and the Commission expects its prior observations will be addressed (see also previous access and recreation finding in this regard).

Construction Impacts

As with access and recreation construction impacts, the project would introduce large construction equipment and activities that are antithetical to shoreline viewshed qualities during construction. The same would apply to any future maintenance episodes, although their duration would be expected to be less than the initial construction. These viewshed impacts require visual mitigation. Such mitigation can be provided through the viewshed enhancements in the East Cliff Drive Parkway project (provided it occurs and maximizes viewshed enhancements as described in the preceding finding).

C. Conclusion

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Sections 30240(b), 30251, and 30253(3) of the Coastal Act to protect (and mitigate impacts to) the public viewshed. Furthermore, in order for the Commission to find the proposed project consistent with these sections of the Coastal Act as cited in this finding, the Commission is conditioning its concurrence for the Corps to remove the rip-rap, effectively screen and camouflage the seawall and stairways by insetting the stairs and providing a natural appearance to mimic natural bluff forms, reduce the seawall height and incorporate a bi-level path into its blufftop edge, limit the number of drain pipes, and camouflage all drain pipes and weep holes (see conditions 1, 2, 3, 4, 5, and 6). Offsetting viewshed

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appearance of the road improvements consistent with the community aesthetic as well as to calm traffic and maintain a neighborhood scale to the improvements; diagonal parking bays with street trees and landscaped bulbs-outs at uneven intervals to increase parking supply and to screen/disguise such parking at the same time; filter strips, grassy swales, and other "soft" treatment and filtration best management practices to cleanse runoff from vehicular surfaces as opposed to relying upon end-of-the-pipe engineering solutions; benches within landscape strips to provide a neighborhood scale and feel to the street; decorative street lighting; bike lanes; undergrounding of overhead utilities; and clear signage directing users to the beach, to other recreational use areas, and to parking. Such design concepts would be more in keeping with the community character, scale, and aesthetic than would be the more rigid designs proposed in which the street would be defined by a straight-line curb and gutter, a straight-line concrete sidewalk connected to the curb and gutter, standard parallel parking along the street, and end-of-the-pipe water quality control using silt and grease traps only."

benefits can also be provided by maximizing viewshed enhancements in the East Cliff Drive Parkway project.

The Commission concludes that if modified in accordance with the Commission's conditional concurrence, the proposed seawall project would be consistent with the Coastal Act Sections 30240(b), 30251, and 30253(3) as discussed in this finding.

D.ESHA and Coastal Waters

1. Applicable Policies

The Coastal Act is very protective of sensitive resource systems such as wetlands, dunes and other environmentally sensitive habitat areas (ESHAs). Section 30107.5 of the Coastal Act defines environmentally sensitive areas as follows:

> *"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Almost all development within ESHAs is prohibited, and adjacent development must be sited and designed so as to maintain the productivity of such natural systems. In particular, Coastal Act Section 30240 states:

> ***Section 30240(a).*** *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> ***Section 30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Coastal Act Sections 30230 and 30231 provide:

> ***Section 30230.*** *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*
>
> ***Section 30231.*** *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through,*

among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233(a) states, in part:

Section 30233(a). *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*

2. Analysis of Consistency with Applicable Policies

As previously described, the Pleasure Point surfing area is extremely popular. It is also part of the Monterey National Marine Sanctuary. The Coastal Act clearly protects these resources.

A. Water Quality

The project does not include any measures to filter and/or treat runoff prior to its discharge into the Sanctuary, at one of the primary recreational water use areas within the Sanctuary. The Sanctuary is home to some 26 Federal and State Endangered and Threatened species and a vast diversity of other marine organisms. Pleasure Point attracts surfers from far and wide to tackle the consistent line of surf wrapping around the headland and heading downcoast to Capitola here. As such, the Commission recognizes the marine and recreational resources involved with the proposed project as sensitive coastal resources that are of state and federal importance.

Runoff that flows directly to the Monterey Bay could negatively impact marine and recreational resources and water quality by contributing additional urban contaminants to the recreational surfing area there. Urban runoff is known to carry a wide range of pollutants including nutrients, sediments, trash and debris, heavy metals, pathogens, petroleum hydrocarbons, and synthetic organics such as pesticides. Urban runoff can also alter the physical, chemical, and biological characteristics of water bodies to the detriment of aquatic and terrestrial organisms.[53] Such impacts would be at the expense of two of the State and nation's great treasures, the Monterey Bay and the Pleasure Point surfing area. Such impacts raise questions of consistency with the above-referenced Coastal Act policies protecting these resources.

The seawall project in front of the Commission is a major public works project involving a multi-million dollar expenditure of funds. The inextricably related East Cliff Drive Parkway project is the same. It is

[53] Pollutants of concern found in urban runoff include, but are not limited to: sediments; nutrients (nitrogen, phosphorous, etc.); pathogens (bacteria, viruses, etc.); oxygen demanding substances (plant debris, animal wastes, etc.); petroleum hydrocarbons (oil, grease, solvents, etc.); heavy metals (lead, zinc, cadmium, copper, etc.); toxic pollutants; floatables (litter, yard wastes, etc.); synthetic organics (pesticides, herbicides, PCBs, etc.); and physical changed parameters (freshwater, salinity, temperature, dissolved oxygen).

generally incumbent upon public projects to do more for the public good, and it is particularly incumbent when such a huge expenditure of public finds is involved. Opportunities to correct inadequate water quality management systems, such as that provided by this project, ought to be pursued, just as non-conforming structures are required to become conforming upon redevelopment. This project will necessarily involve reconstruction of drainage facilities. The resources at risk, too, are significant. Accordingly, in part to mitigate for impacts to surfing, the Commission finds that enhanced water quality measures are necessary in this case to satisfy Section 30230 and 30231 restoration and enhancement specifications. It is not enough to continue to channel unfiltered and untreated runoff into one of the primary recreational water use areas within the Sanctuary.

In light of the significance of the offshore receiving water body, the runoff at this location needs to be "finished" prior to its ultimate discharge in the project area. The Commission often requires a managed "treatment train" of BMPs for this purpose. Such a train typically includes different biological and engineered BMPs for filtering and treating runoff at different points as it flows through a project area, and often includes overall active management in the project area to both maintain BMP elements of the "train" and to implement more global BMPs overall (e.g., vacuum sweeping). Typically, a finishing BMP is applied at the last stage of the train after the other BMPs have done their job; it is the finishing BMP that the Commission envisions here. In this case an engineered unit designed to actively filter and treat runoff to improve overall water quality (i.e., Stormwater Management Inc. *StormFilter* system or equivalent)[54] is the most appropriate BMP for this purpose given the limited space available in the East Cliff Drive project area to construct some type of biological filter/treatment BMP.

Thus, a condition is applied to ensure that all runoff is collected, filtered, and treated, consistent with the Commission's typical water quality improvement requirements (see condition 7).

B. Intertidal Area

A portion of the seawall would be constructed in the Sanctuary intertidal area, and thus would permanently displace both State-owned tidelands and Sanctuary resources.[55] As previously detailed, such fill is prohibited by Section 30233(a), but can be allowed to the extent the more specific armoring provisions of Section 30235 (previously cited) apply. Likewise, Sanctuary intertidal area is generally considered to be ESHA by the Commission, and Section 30240 prohibits such non resource-dependent development in it. Again, such fill can be allowed to the extent the more specific armoring provisions of Section 30235 (previously cited) apply, and for the same reasons. Thus when read broadly, such fill is allowed by the Act. ACOE estimates the permanent intertidal habitat loss to be 3,049 square feet, and categorizes this impact as "non-significant."

The more specific requirement of Section 30235 may allow for the fill, but the loss of over 3,000 square

[54] The StormFilter system is what was required as the "finishing" units at the high school project in Watsonville as well as the Monarch Village Apartments project in Santa Cruz.

[55] The Corps still needs to obtain permission from both State Lands and the Sanctuary for such fill.

feet of Sanctuary ESHA is a significant Coastal Act impact, and it requires compensatory mitigation. If the Act is to be read broadly to allow this fill (in recognition of the 30235 requirements for armoring), appropriate enhancements and mitigations must be provided to offset loss of this habitat and coastal water area. In this case, mitigation can take the form of the enhancement of water quality described above (see condition 7). Such enhancement can help to increase the biological productivity of the Sanctuary nearshore environment while at the same time reducing the potential for recreational users, including surfers, to be adversely affected by typical runoff pollutants.

C. Construction Impacts

In addition to the permanent loss of ESHA, the proposed project would result in temporary negative impacts to surrounding ESHA and beach from construction activities. The beach/intertidal construction zone at the base of the bluffs would occupy roughly half an acre. During the roughly six to seven months of construction activities, the resource values of the affected area would be reduced and/or eliminated. Construction noise, lights, vibration, and overall activities and human presence will also be expected to adversely affect listed (e.g., southern sea otter and California brown pelican) and unlisted species and their habitat inside and adjacent to the construction zone established. Furthermore, although the direct construction impacts themselves would be expected to end when the construction activities themselves ended, the effect of such construction in and adjacent to ESHA on the short-term productivity of the affected habitat areas could be felt for many years. In other words, the reduced habitat area productivity during the construction period would not be expected to correct itself instantaneously when construction ended, and its effects may linger for some time, affecting habitat values until previous productivity levels have been reestablished. In addition, the amount of time necessary for such a reestablishment of habitat value also represents lost productivity in and of itself (because this time period when the habitat areas might otherwise be thriving would not be available as a foundation for encouraging habitat values here). Thus, not only will there be the construction period direct and indirect affects, but a "hangover" period of reduced habitat productivity as the habitat recovers over time.

These impacts can be minimized by appropriate construction methods and habitat monitoring before and during construction (as are already a part of the ACOE project), but they cannot be eliminated entirely. These unavoidable constructing impacts can, however, be effectively mitigated by the above-described water quality improvements (see condition 7).

D. Conclusion

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Sections 30230, 30231, 30233(a), and 30240 of the Coastal Act to protect, enhance, and mitigate impacts to ESHA and coastal waters. Furthermore, in order for the Commission to find the proposed project consistent with these sections of the Coastal Act as cited in this finding, the Commission is conditioning its concurrence for the Corps to incorporate advanced filtration and treatment of runoff prior to its discharge in the project area (see condition 7). Provided the storm drain outlets are minimized, and runoff from them filtered and treated as directed to enhance coastal water quality, the Commission can find that the proposed project has been designed in such a way as to mitigate for

unavoidable ESHA and near coastal water impacts engendered because of a seawall required pursuant to the more specific requirements of Section 30235, and that project ESHA and water quality impacts can be minimized and mitigated to the degree feasible.

The Commission concludes that if modified in accordance with the Commission's conditional concurrence, the proposed seawall project would be consistent with the Coastal Act Sections 30230, 30231, 30233(a), and 30240 to the degree feasible as discussed in this finding.

E. Cumulative Impacts

Coastal Act Section 30250(a) addresses cumulative impacts, stating in part as follows:

> *New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located…where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. …*

Shoreline armoring has significant negative impacts on coastal resources, as detailed in the preceding findings. In particular, and perhaps most far reaching, these structures halt the natural process of shoreline erosion and are expected to lead to the loss of beach and offshore recreational resources over the very long term (see previous findings). In this case, ACOE has not attempted to quantify this project's contribution to these types of cumulative impacts, and has concluded that these types of cumulative impacts would not be significant in this regard. There is little technical support for this conclusion, and, unfortunately, no mathematical, physical or other model that could be used to correct it.

It has become common practice to contend that the impacts of individual projects are negligible because the structure being proposed is small in relation to the coastline, or its impacts individually can be addressed in some manner. This phenomenon has been described as the 'tyranny of small decisions' as summarized by Gary Griggs, James Pepper and Martha Jordan (*California's Coastal Hazards: A Critical Assessment of Existing Land-Use Policies and Practices*). They observe:

> *[decisions to approve shoreline protective devices] are usually made on a project-by-project basis, they tend to be evaluated independently, without any systematic consideration of the aggregate or cumulative effects either within or among jurisdictions. Within such a decision-making context any given project can be viewed as small and thus easy to rationalize in terms of approval. Cairns (1986) calls this endemic failure to take into account the aggregate effects of environmental management 'the tyranny of small decisions.'*

The cumulative effect of this seawall when considered in relation to other armoring in the Pleasure Point and immediate adjacent vicinity is that, over time, beaches in this area will be lost, and surfing areas will disappear. The mitigations imposed here will alleviate, but cannot completely eliminate, the long-term impacts to the public both as a result of this individual project and the overall cumulative effect of it together with all the other armoring along this stretch of coast. Some of this long term impact was "inherited" by the people of the state due to the fact that much of this stretch of coast was already armored to a certain degree, when the coastal permitting requirements of Proposition 20 and the Coastal

Act were instituted in the early 1970s. With the sea level continuing to rise, and the shoreline continuing to erode, it is expected that the beach fronting these properties, like all California beaches on which armoring is located and on which the back-beach has thus been effectively "fixed" in location, will eventually disappear over time. The State has not to date completely come to grips with this phenomena.

The Commission has identified a series of mitigations to minimize impacts to coastal resources and to mitigate unavoidable impacts to the degree feasible (see conditions). These conditions, particularly the surfing monitoring requirement and the sand supply study, can mitigate for cumulative impacts in this case as well, and are required in part because of the cumulative long-term impacts associated with the project.

The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Section 30250(a) of the Coastal Act protecting against adverse cumulative impacts, but that if the project is modified in accordance with the Commission's conditional concurrence, then it would be consistent with the Coastal Act Section 30250(a) to the degree feasible as discussed in this finding.

F. Concurrence Determination Conclusion

In sum, the project presents a difficult decision for which there are clearly trade-offs. If the seawall is constructed, then the East Cliff Drive recreational area will be protected, but beach and surfing access will be incrementally diminished over some amount of time. If the seawall is not constructed, the East Cliff Drive parkway area will be incrementally lost in the near-term, but beach and surfing access will be unaffected by a seawall here during that time. At some point, the existing regulatory framework is such that armoring would be allowed to protect either what remains of East Cliff Drive and/or the inland residences, as required by the Coastal Act. At that point, the same beach and surfing impacts would occur (and continue from that point on into the long-term). Whether the wall would be constructed now or a decade or so from now, would appear to have very little difference on the surf. This is because the limited additional horizontal space that would be created by allowing erosion of East Cliff Drive over that short time has much less impact on the surf break than does the vertical component of sea-level rise.

In any case, there exists existing endangered structures for which the only feasible alternative is a shoreline structure. The shoreline structure proposed results in adverse coastal resource impacts inconsistent with Chapter 3 of the Coastal Act. The Commission therefore concludes that ACOE's proposed seawall is inconsistent with the provisions of Chapter 3 of the Coastal Act. Furthermore, in order for the Commission to find the proposed project consistent with the Sections of Chapter 3 of the Coastal Act as cited in these findings, the Commission is conditioning its concurrence for the Corps to minimize impacts and mitigate those that are unavoidable (see conditions).

Based on the information available to date, the Commission concludes that if modified in accordance with the Commission's conditional concurrence, the proposed seawall project would be consistent with the those sections of Chapter 3 of the Coastal Act discussed in these findings, and thus consistent with the enforceable policies of the CCMP.